THE OXFORD WORLD MACROECONOMIC MODEL

AN OVERVIEW

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Introduction

It has long been one of OEF's guiding principles that many of the most important and interesting macroeconomic issues are inherently international. Globalization means that policy makers and analysts have to form judgements about important economic developments not only in their own country, but in their major trading partners as well. A change in US monetary policy, for instance, has repercussions for the whole world; oil and commodity price shocks have been the major source of terms of trade movements in Europe in the last quarter century or so; governments are increasingly collaborating over monetary, fiscal and environmental policies. All of this means that single country econometric models, which treat world trade, world prices and exchange rates as exogenous, are not best suited to analysing some of the most important issues of interest to financial and business economists.

The root cause of this integration is the massive increase in trade and capital flows between countries in the post-war period, and OEF's client base is testament to the growth in interest in international issues. With offices in the US and Switzerland, as well as Oxford, OEF aims to combine access to local information and expertise with a global outlook to provide a truly international service. The Oxford World Macroeconomic Model reflects that priority, as coverage of the major trading countries has both deepened, and widened.

The latest version of the Oxford Model improves on previous vintages by incorporating well-behaved, theory-consistent models for all of the individual countries covered, not just the big seven. It maintains the tradition of allowing for significant cross-country differences in model structures, but ensures that those differences truly reflect economic, as opposed to economic model-builders', idiosyncrasies. Where possible, and it is possible in the majority of cases, the functional form for equations is left the same across countries. Parameters differ of course, and this means that different countries exhibit different behaviour in response to shocks (although economy structure also accounts for variations). Now, however, tracing the root cause of these differences, and attributing them to

underlying behaviour or structure, is much simpler. For instance, real wage rigidity is higher in some countries than others, and specific coefficients in wage and price equations reflect this. Unemployment will tend to rise further and faster in these countries in response to an adverse demand shock, even though the functional form of wage and price equations is identical across countries.

Theoretical Motivations

Different types of model suit different purposes. The days of relying on a single, large macroeconometric model as the definitive "pictorial" representation of an economy are gone. However, the same demands which drove the construction of large-scale models of the 1970s and 1980s are still there: business economists still need to forecast, they still need to analyse the effects of government policy, and they still need to study the implications of different theories about behaviour.

Broadly speaking, there are three types of model designed to help the business economist in these tasks. At one extreme, there are the purely statistical models known as vector autoregressions (VARs). Their strengths are short-term forecasting (usually six months to a year or so) and the generation of stylised facts. However, they are much less useful for longer-term forecasting and, because they lack any economic structure, they cannot be used for policy analysis.

At the other extreme are the so-called computable general equilibrium models (CGEMs). These models' equations are derived by assuming private agents solve dynamic optimisation problems, and they typically do not have error terms, or residuals, like econometrically-estimated relationships. They are calibrated so that in equilibrium they reproduce historical averages of key macro variables. Their strength is their high degree of rigour, but when econometricians perform statistical tests on them, they typically do badly relative to the traditional models.

At OEF we take the third, and what is still the mainstream, approach. However, we recognise that both the approaches described above have important lessons for traditional model-builders. A good test of a macro model is whether it does as well as a VAR in reproducing short-run behaviour, and whether its long-run relationships are supported by cointegration in VARs. Also CGEMs have taught us

the importance of theory, and that it is often better to impose a coefficient to match a tried-and-tested stylised fact than to stick slavishly to coefficients estimated from short samples of data. The main advantage of the macroeconometric approach is that it provides both a forecasting tool and a tool for policy analysis. This approach is the closest we will get to the "jack-of-all-trades", combining sensible forecasts with well-founded analysis.

Coverage of the Oxford Model

The 'core' Oxford World Model now comprises twenty-four country models together with six trading blocs. In addition, there are now more than 20 'emerging market' country models. The country models are fully interlinked via trade, prices, exchange rates and interest rates, with the blocs completing all the world coverage.

The models can be classified into five groups[1]:

I	II	III	IV	V
US	Sweden	Poland	Denmark	Eastern Europe
Japan	Switzerland	Hungary	Finland	Latin America
Germany	Belgium	Russia	Norway	Africa
France	Netherlands	Czech Republic	Ireland	OPEC
Italy	Spain	Brazil	Portugal	Rest of OECD
UK	Austria	Argentina	Bulgaria	Rest of World
Canada	Mexico	Chile	Croatia	
China	Australia	South Africa	Greece	
	South Korea	Indonesia	Romania	
	Taiwan	Malaysia	Slovakia	
	Hong Kong	Philippines		
		Turkey		
		Singapore		
		Thailand		
		India		
Typical number of variables:				
250+	150-200	100-200	25-100	

[1] New models for countries including Egypt, Iraq, Iran, Israel, Jordan, Saudi Arabia and Syria are

In addition, the model includes a bloc of world variables such as oil and commodity prices, world GDP and industrial production, OECD average inflation, aggregates covering the euro-11 group etc. The country models (I-IV) are identical in structure but the bigger models incorporate greater disaggregation and more financial sector detail. The blocs identify the key aggregates - GDP, consumer prices, exchange rate and current account - for a further 39 countries (see Annex A for full list of countries covered).

The core models

An outline of the Oxford country models

The structure of each of the country models continues to be based on the income-expenditure accounting framework. However, the models now have a much more coherent treatment of supply. In the long run, each of the economies behaves like the textbook description of a one sector economy under Cobb-Douglas technology in equilibrium. Countries have a natural growth rate, which is ultimately beyond the power of governments to alter, and is the result of population and productivity growth. Output cycles around a deterministic trend, so at any point in time we can define the level of potential output, corresponding to which is a natural rate of unemployment. Firms are assumed to set prices given output and the capital stock, but the labour market is imperfectly competitive. Firms bargain with workers over wages, but they get to choose the level of employment. Countries with high real wages get high unemployment in the long run, and countries with rigid real wages get persistently high unemployment relative to the natural rate.

Inflation is a monetary phenomenon in the long run. All the models have vertical Phillips curves, so expansionary demand policies put upward pressure on inflation. Unchecked, these pressures would cause the price level to accelerate away without bound, and in order to prevent this we have endogenised monetary policy. For the main industrialised countries, the latter is summarised in an inflation target, and interest rates are assumed to move up whenever inflation is above the target rate, and/or output is above potential (a so-called 'Taylor rule'). The coefficients in the interest rate reaction function, as well as the inflation target itself, reflect our

currently being tested.

perceptions of how hawkish different countries are about inflation. A by-product of this new system is that simulations under fixed interest rates make sense for only a couple of years or so. If you do not "do" monetary policy, and Phillips curves are vertical, then you end up with hyperinflation (or hyperdeflation, depending on the shock) after a few years.

Demand is modelled in much the same way as before. Consumption is a function of real incomes, real financial wealth, real interest rates and inflation. Investment equations are influenced by "q-theories", in which the investment rate is determined by its opportunity cost, after taking taxes and allowances into account. Countries are assumed to be "small", in the sense that exports are determined by demand and a country cannot ultimately determine its own terms of trade. Consequently, exports are a function of world demand and the real exchange rate, and the world trade matrix ensures adding-up consistency across countries. Imports are determined by real domestic demand and competitiveness.

The models' financial sectors have been rationalised and standardised. A financial block, which includes variables of direct relevance to financial market participants, has been added (FINMOD). This block forecasts total rates of return on cash, stocks and bonds. Moreover, the treatment of asset holdings by sector has been greatly simplified. The private sector is broken down to personal and corporate components, but no further. General government net debt is now identified for all countries, and both net overseas assets and net IPD flows are derived by residual.

More generally, our approach has been to aggregate where it is not clear that disaggregation (i) improves the quality of forecasts or analysis or (ii) serves particular users' needs. From a practical point of view, aggregation tends to make it easier to identify the model with theoretical counterparts, and thus gives us a clearer idea of its relative strengths and weaknesses. Many financial flows have been aggregated, and government accounting conventions have been standardised at a relatively high level of aggregation. On the other hand, we continue to disaggregate the components of personal income, the categories of investment and the energy sector, partly because we believe that doing so helps us to forecast better, but also

because we recognise that these variables are of interest to particular users. Annex C presents a schematic summary of a typical country model.

The Oxford World Model structure

Model variables are divided into demand and supply, core and non-core. Coverage of core variables is standard across all country models; non-core coverage is determined by data availability and country-specific requirements. Core demand variables include all the aggregate expenditure components, at constant and current prices, monetary policy variables and FINMOD. The demand non-core includes disaggregated consumption and investment, as well as important indicator variables such as retail sales and car sales. Core supply consists of variables determining the natural levels of output, unemployment and real wages. Prices are also disaggregated in the core supply block. Non-core supply disaggregates employment and nominal earnings. Separate blocks build up the government, personal and corporate sector flow accounts, while the G7 energy model is also included as a distinct entity in some versions.

The following sections describe the structure and theoretical motivation of some of the key equations in the core model. Tables 1-5 presents the responses of five of the key variables to shocks to each of their determinants in the G6 models (i.e. elasticities), to illustrate the properties of these equations. (Annex B explains the technical structure of the Oxford Model equations.)

Consumption

There is little new here. We continue to follow the standard econometric treatment pioneered by Hendry et al (1985). The equations take the form:

$$\Delta c = a1 * \Delta y + a2 * \Delta u - a3 * (c(-1) - a4 * y(-1) - (1-a4) * W(-1) + a5 * R(-1))$$

where lower case letters denote logs and c, y and u are consumption, real income and unemployment respectively, while W and R refer to the financial wealth-income ratio and real interest rates. We acknowledge that this treatment is a little old-fashioned, and we are investigating more modern treatments which emphasise intertemporal optimisation, the importance of wealth in the form of human capital, the link with labour supply and consumption smoothing in the face of shocks. However, all the variables that the modern treatments stress, with the exception of human wealth, are included in our formulation; real interest rates, taxes and wealth

are what matter, and the only missing ingredient is forward looking behaviour. More importantly, these error-correction formulations appear to mimic consumption smoothing in a number of countries very well, an observation which mitigates some of our worries about their theoretical underpinnings.

Investment

Three aspects of gross fixed investment are identified in the Oxford Model: private business, private housing and government (which is exogenous).

The equations for business investment are based on so-called q-theories of investment. In these, capital is time-consuming to install and these adjustment costs drive a wedge between the post-tax marginal product of capital and its marginal cost. Profit maximising firms invest when the marginal return is greater than the replacement cost ($q > 1$), and reduce investment, or even scrap, when the reverse holds. In the long run, the capital stock reaches its desired level, all investment is replacement, $q = 1$ and the familiar marginal productivity relationship holds. The equations are, once again, backward looking and take the following form:

$$\Delta i = a1 * q - a2 * (i(-1) - k(-1)) + a3 * \Delta y$$

where i is private sector business fixed investment, k is the equivalent capital stock and y is GDP; q is defined as the post tax marginal product of capital relative to the real interest rate. With Cobb-Douglas, constant return to scale technology, the capital-output ratio is constant in the long run, and equal to the post-tax, post-depreciation real interest rate divided by the capital share. There are also short-term accelerator effects from changes in output, which can be justified in a q-framework if some companies are credit-constrained.

Personal sector housing investment is determined analogously to consumption, by real income, wealth and interest rates, since it is considered part of a portfolio of spending decisions taken by households.

International Trade

Trade flows are disaggregated into fuel, non-fuel goods, and services. The non-fuel goods components reflect the bulk of exports and imports for most countries and we focus on those here. Exports and imports are demand determined:

$\Delta x = \Delta wt - a1 * cu - a2 * \Delta wcr - a3 * (x(-1) - wt(-1) - a4 * trx)$

$\Delta m = b1 * \Delta tfe + b2 * \Delta wcr - b3 * (m(-1) - tfe(-1) - b4 * wcr(-1) - b5 * cu(-1))$

x refers to exports of non-fuel goods; m to the equivalent imports; wt is world trade; tfe, total final expenditure; wcr, relative unit labour costs; and cu, capacity utilisation as measured by model estimates of the output gap. The time trends capture secular shifts in a country's world trade share caused by non-price factors, and the impact of the long-term increase in the specialisation of production on import penetration. Trade competitiveness elasticities are typically between 0.3 and 0.6; and most country models satisfying the Marshall-Lerner conditions, so that a sustained improvement in competitiveness will lead to an improvement in the trade balance in the long run.

The equations for trade in services are analogous to those for non-fuel goods, while imports of fuel meet the gap between, on the one hand, domestic and export demand and, on the other, domestic production. All trade prices are a weighted average of domestic and world prices.

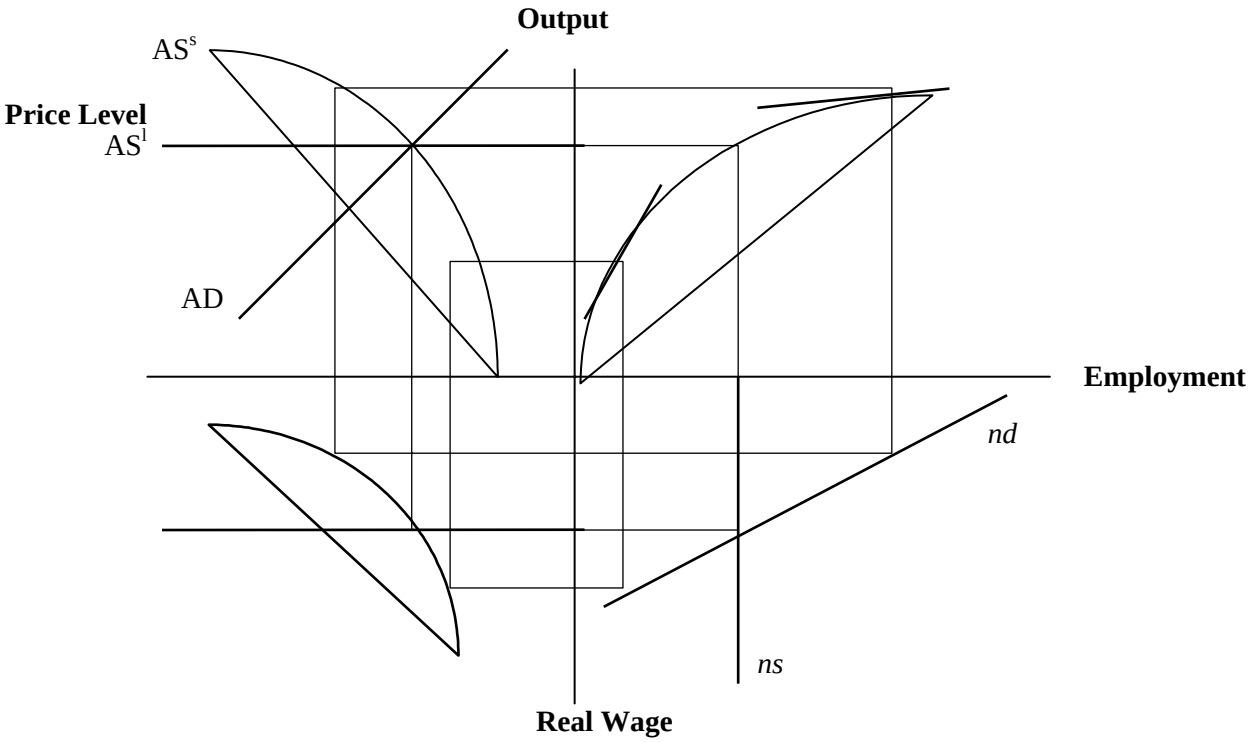
Core Supply

Given its importance to overall model properties, this is probably best summarised as a block, rather than equation by equation. The following diagram is a useful, if simplistic, description of the key features of the model's supply side:

The north-east quadrant shows the production function with diminishing returns, relating output to employment. Tangents to the production function are the marginal product of labour, which in equilibrium equals the real wage. These tangents trace out a demand for labour in the south east quadrant - our employment equation (*nd*). Given a fixed labour supply (*ns*), the intersection generates the

equilibrium real wage consistent with no involuntary unemployment and normal (or potential) output. The latter is traced out along the vertical aggregate supply curve (AS_l) in the northwest quadrant.

In the short run, however, relatively rigid real wages generate involuntary unemployment ($n_d \neq n_s$), while nominal inertia means that the short run relationship between real wages and the price level is shown by the hyperbola in the south-west quadrant. Short run changes in labour demand then trace out a positively sloped short run aggregated supply curve (AS_s), ensuring that changes in aggregate demand (AD), as derived from an IS-LM system, translate into short run changes in prices and output, although the long run effects are felt on prices alone.



In short, the employment equation defines a level of real unit labour costs (real wages/productivity) which is constant in the long run. Consistent with this level of real unit labour costs are natural levels of output and unemployment. When the economy is away from these natural levels, inflation and interest rates move to bring the economy back towards equilibrium. The larger are nominal and real rigidities, the larger and longer-lived are real disequilibria.

Algebraically, the employment equation solves in the long run for the constant level of real unit labour costs, given by labour's share in the production function, while

the wage and price equations solve in the long run for the level of unemployment consistent with this labour share. In the short run, both wage and price equations incorporate nominal and real wage rigidity, which ensure the existence of "involuntary" unemployment and monetary effects on the real economy.

With vertical Phillips and aggregate supply curves, monetary policy determines the inflation rate, while structural, or supply side policy determines the unemployment rate. The NAIRU (non-accelerating inflation rate of unemployment) is related to the so-called 'tax wedge' (the gap between the total real cost of labour to employers, including social security contributions, and the real value of post-tax wages received by employees), and to real energy prices.

Simulations

Below we present simulations of monetary and real shocks. But before we plunge into the details, it is worth describing what we would expect to see, in general terms, in the different types of simulations. These expectations, which are based on textbook analyses, help to explain why we have imposed the theoretical restrictions described above.

The first distinction to draw is that between real and nominal variables. In general, in the long run only real shocks should affect real variables, like GDP and unemployment. Monetary shocks will change nominal variables, like the price level and nominal wages, but not the ratio of the two - real wages.

Two factors complicate the picture, however. First, monetary shocks do have real effects in the short to medium run because of the presence of nominal and real rigidities in wage and price setting. Moreover, the greater these rigidities, the longer it takes for the model to reach equilibrium following a shock, and 10 years, in many cases, does not constitute the long run. Second, endogenous monetary policy means that, while real variables may respond in similar ways across countries, nominal variables need not. Our interest rate reaction functions ensure that inflation is stabilised, but how long that takes to happen depends on the size of nominal rigidities and on the credibility of the monetary authorities, as summarised in the

parameters of the reaction function. Consequently, long run impacts on the price level, nominal earnings, the exchange rate...etc can differ substantially across countries. In addition, the combination of nominal rigidities and a rule targeting inflation causes the model to be cyclical at business cycle frequencies, so that in many cases it will not have settled down even ten years after a shock. This is apparent in all the simulations below.

Tables 6-12 summarise the following simulations for the G3 and the UK

1. Fiscal shock - Government consumption raised by 1% of GDP
2. Investment up 1% of GDP ex ante
3. Monetary shock - Interest rates up 1% point
4. Monetary shock - 'Equilibrium' money supply raised 2%
5. Monetary shock - 5% exchange rate depreciation
6. World oil price + $10pb
7. Ready reckoner: GDP + 1%

Note that the simulations are run for all the countries and not only the one concerned. The shocks are applied from the first quarter of 2005 to the last quarter of 2009.

1. Fiscal shock - Government consumption raised by 1% of GDP (Table 6)

Table 6 shows the effects of a sustained rise in government expenditure on goods equivalent to 1% of GDP. The key points to note are:

- The rise in demand leads to a prolonged rise in output.
- However, with potential output unaffected directly by such a 'demand' shock, inflationary pressures quickly emerge. This in turn leads to higher interest rates, which squeeze private sector expenditure.
- In the long-run, output returns close to base levels - i.e. to potential output. Inflation also returns to base levels, but the price level and the nominal interest rates remain permanently higher, as does the real exchange rate - it is these responses which embody the 'crowding' out mechanism.

- The deterioration in competitiveness means that the current account position is permanently worse, as is the government deficit. And the government budget position continues to deteriorate throughout the period of the simulation as higher borrowing raises debt servicing costs.

It is worth highlighting that the long-run effect of such a demand shock on output is, if anything, likely to be negative in the Oxford Model because of its impact on business investment. Typically, investment rises in the short term, reflecting the accelerator effects of higher demand. In the long-run, however, the effect of higher real interest rates dominates so that investment falls below base levels. This in turn will lead over time to a lower capital stock and hence lower potential output.

2. Investment up 1% of GDP ex ante (Table 7)

This shock is in many ways analogous to the fiscal shock presented in Table 6. However, because the higher investment adds to the capital stock, and hence potential output, it leads to a sustained rise in output and a better inflation-output trade-off than higher government consumption.

3. Interest rates up 1% point (Table 8)

This simulation involves a sustained ex post rise in interest rates, with monetary policy assumed not to respond to the consequential changes in output and inflation. As noted earlier, such a policy would not be sustainable in the long run; we therefore present results only for two years.

This simulation implies that, as a ready reckoner, each 1% point rise in interest rates reduces GDP growth in the G3 by about ½% point in its first year, while inflation is reduced by ½% point after two years.

4. Monetary shock - 'equilibrium' money supply raised 2% (Table 9)

As in simulation 1, this demand shock - albeit monetary rather fiscal - leads to a rise in GDP in the short term, which is crowded out in the longer term by a rise in the price level. Indeed, for such a shock to the level of the money supply, all nominal variables - prices, earnings etc - rise proportionately, while the exchange rate

depreciates by the same extent. Hence, in the long run, real wages, profit margins, the real exchange rates etc are all unchanged. At the same time, inflation and nominal interest rates return to base levels, implying unchanged real interest rates. The Model is therefore 'neutral' to monetary shocks in the long run (although adjustment is not complete within the five-year horizon shown here, and the Model exhibits damped cycles to its new equilibrium).

5. Monetary shock - 5% exchange rate depreciation (Table 10)

This shock is analogous to a shock to the level of the money supply. The improvement in competitiveness caused by the depreciation boosts net trade in the short term, and hence GDP rises above base although this positive effect may be mitigated by weaker real consumption caused by rising import prices. Both prices and earnings gradually rise - eventually by the full extent of the depreciation (although this adjustment tends to be slower for the G3 than for the more open smaller economies).

6. World oil price plus $10pb (Table 11)

All of the simulations presented so far represent nominal shocks. A rise in the world oil price, in contrast, represents a 'real' shock. Higher energy costs lower the profitability of production and therefore reduce firms incentives to supply, cutting potential output. As a consequence, this shock leads to a sustained loss of GDP.

7. Ready reckoner: GDP + 1% (Table 12)

Table 12 presents a simulation of a rise in GDP of 1% sustained over two years to provide a 'ready reckoner' for the effects of higher growth on inflation, unemployment and employment (i.e. the Okun coefficient) and the government balance. It should be emphasised that the results of such a simulation depend critically on the assumed cause of the rise in GDP and hence the results should be used cautiously. Here we assume a rise in the main components of final demand (ie. consumption, investment and exports); the results could look rather different if GDP were to change because of a supply-shock (e.g. lower oil prices).

Conclusions

This overview has outlined the Oxford Model of the world economy and illustrated its key simulation properties. It has shown that, while the Model exhibits 'Keynesian' features in the short to medium term, its long-run properties are 'neo-classical' - i.e. attempts to raise growth and employment by boosting demand will ultimately lead to higher prices, with output in the long run determined by supply-side factors - productivity and population growth.

OEF is continually working to improve the model. Attention has focussed recently on adding more detailed models of the leading emerging market economies for example. Further new work is looking at the treatment of expectations and capital flows. Comments and suggestions for further analysis are, of course, very welcome.

Table 1: Consumption - Key Elasticities
Impact on consumer spending of ...
(% changes from base projection)

	US				France			
	Q1	**Q5**	**Q9**	**Long Run**	**Q1**	**Q5**	**Q9**	**Long Run**
1% rise in real income	0.4	0.9	0.9	1.0	0.3	0.7	0.8	1.0
10% rise in financial wealth	0.0	0.9	1.1	1.3	0.0	0.4	0.7	0.9
1% point rise in interest rates	0.0	-0.3	-0.3	-0.3	-0.5	-0.4	-0.3	-0.3
1% point rise in inflation	0.0	0.2	-0.1	-0.7	-	-	-	-

	Japan				Italy			
	Q1	**Q5**	**Q9**	**Long Run**	**Q1**	**Q5**	**Q9**	**Long Run**
1% rise in real income	0.2	0.8	0.9	0.9	0.2	0.4	0.5	0.9
10% rise in financial wealth	0.0	1.0	1.1	1.2	0.4	0.7	0.8	1.3
1% point rise in interest rates	0.0	-0.2	-0.2	-0.2	0.0	-0.6	-0.7	-0.5
1% point rise in inflation	-	-	-	-	-	-	-	-

	Germany				UK			
	Q1	**Q5**	**Q9**	**Long Run**	**Q1**	**Q5**	**Q9**	**Long Run**
1% rise in real income	0.0	1.0	1.0	1.0	0.3	0.8	0.9	0.9
10% rise in financial wealth	0.0	0.7	0.9	0.1	0.0	0.5	0.7	0.4
1% point rise in interest rates	-0.2	-0.4	-0.5	-0.5	-0.1	-0.5	-0.6	-0.6
1% point rise in inflation	-	-	-	-	-	-	-	-
10% rise in housing wealth	-	-	-	-	0.0	0.3	0.4	0.4
1% point rise in unemployment rate		-	-	-	-1.0	-0.3	0.1	0.0

Table 2: Exports of Non Fuel Goods - Key Elasticities
Impact on exports of.....
(%changes from base projection)

	US				France			
	Q1	**Q5**	**Q9**	**Long Run**	**Q1**	**Q5**	**Q9**	**Long Run**
1% rise in world trade	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
1% rise in relative unit wage cost	0.0	-0.4	-0.5	-0.5	-0.3	-0.5	-0.5	-0.6

	Japan				Italy			
	Q1	**Q5**	**Q9**	**Long Run**	**Q1**	**Q5**	**Q9**	**Long Run**
1% rise in world trade	1.0	1.0	1.0	1.0	0.9	1.0	1.0	1.0
1% rise in relative unit wage cost	0.0	-0.3	-0.4	-0.4	0.	-0.3	-0.3	-0.3

	Germany				UK			
	Q1	**Q5**	**Q9**	**Long Run**	**Q1**	**Q5**	**Q9**	**Long Run**
1% rise in world trade	1.0	1.0	1.0	1.0	0.4	1.5	1.0	1.0
1% rise in relative unit wage cost	-0.3	-0.4	-0.4	-0.4	-0.1	-0.4	-0.5	-0.5

Table 3: Imports of Non Fuel Goods - Key Elasticities
Impact on imports of....
(% changes from base projection)

	US				France			
	Q1	**Q5**	**Q9**	**Long Run**	**Q1**	**Q5**	**Q9**	**Long Run**
1% rise in total final expenditure	3.2	1.3	1.1	1.0	2.5	1.3	1.1	1.0
1% rise in relative unit wage costs	0.0	0.4	0.6	0.6	0.0	0.2	0.3	0.3

	Japan				Italy			
	Q1	**Q5**	**Q9**	**Long Run**	**Q1**	**Q5**	**Q9**	**Long Run**
1% rise in total final expenditure	2.1	1.6	1.3	1.0	3.4	1.6	1.0	1.0
1% rise in relative unit wage costs	0.2	0.4	0.5	0.6	0.0	0.2	0.2	0.2

	Germany				UK			
	Q1	**Q5**	**Q9**	**Long Run**	**Q1**	**Q5**	**Q9**	**Long Run**
1% rise in total final expenditure	2.5	1.8	1.4	1.0	1.9	1.5	1.3	1.0
1% rise in relative unit wage costs	0.0	0.3	0.4	0.5	0.0	0.3	0.4	0.6

Table 4: Employment - Key Elasticities
Impact on employment of...
(% changes from base projection)

	US				France			
	Q1	**Q5**	**Q9**	**Long Run**	**Q1**	**Q5**	**Q9**	**Long Run**
1% rise in GDP	0.4	0.7	0.8	1.0	0.2	0.7	0.8	1.0
1% rise in average earnings	-0.1	-0.4	-0.7	-1.0	-0.1	-0.6	-0.8	-1.0

	Japan				Italy			
	Q1	**Q5**	**Q9**	**Long Run**	**Q1**	**Q5**	**Q9**	**Long Run**
1% rise in GDP	0.1	0.6	0.8	1.0	0.3	0.7	0.8	1.0
1% rise in average earnings	0.0	-0.4	-0.7	-1.0	-0.1	-0.5	-0.7	-1.0

	Germany				UK			
	Q1	**Q5**	**Q9**	**Long Run**	**Q1**	**Q5**	**Q9**	**Long Run**
1% rise in GDP	0.1	0.6	0.8	1.0	0.1	0.6	0.9	1.0
1% rise in average earnings	-0.1	-0.5	-0.7	-1.0	-0.2	-0.6	-0.8	-1.0

Table 5: Average Earnings - Key Elasticities
Impact on average earnings of.....
(% changes from base projection)

	US				France			
	Q1	**Q5**	**Q9**	**Long Run**	**Q1**	**Q5**	**Q9**	**Long Run**
1% rise in GDP deflator	0.0	1.0	1.1	1.0	0.1	0.6	1.0	1.0
1% rise in CPI	0.0	0.5	0.0	0.0	0.0	0.4	0.2	0.0
1% pt rise in unemployment rate	0.0	-0.3	-0.3	-0.3	0.0	-0.3	-0.4	-0.2
1% point rise in wedge	0.0	0.6	0.6	0.1	-	-	-	-
1% rise in productivity	0.1	1.3	1.0	1.0	0.0	0.7	0.9	1.0

	Japan				Italy			
	Q1	**Q5**	**Q9**	**Long Run**	**Q1**	**Q5**	**Q9**	**Long Run**
1% rise in GDP deflator	0.0	0.2	0.3	1.0	0.0	0.9	1.0	1.0
1% rise in CPI	0.0	0.1	0.2	0.0	0.9	0.1	0.0	0.0
1% pt rise in unemployment rate	0.0	-0.1	-0.4	-0.5	-0.6	-0.6	-0.3	-0.2
1% point rise in wedge	-	-	-	-	-	-	-	-
1% rise in productivity	0.0	0.3	0.5	1.0	0.5	1.0	1.0	1.0

	Germany				UK			
	Q1	**Q5**	**Q9**	**Long Run**	**Q1**	**Q5**	**Q9**	**Long Run**
1% rise in GDP deflator	0.0	0.5	0.9	1.0	0.3	1.0	1.0	1.0
1% rise in CPI	0.0	0.5	0.3	0.0	0.1	0.1	0.1	0.0
1% pt rise in unemployment rate	0.0	-0.4	-0.6	-0.2	0.0	-1.1	-1.4	-1.4
1% point rise in wedge	0.0	0.2	0.4	0.1	-	-	-	-
1% rise in productivity	0.0	0.8	1.0	1.0	0.4	0.9	1.0	1.0

Table 6: Fiscal Shock - Government Consumption Raised By 1% of GDP
(% changes from base)

	Year	USA	Japan	Euro_12	UK
GDP					
	1	1.1	1.2	0.8	0.7
	3	0.4	1.7	0.5	0.3
	5	0.4	0.5	0.5	0.4
Consumer Prices	1	0.0	0.2	0.0	0.0
	3	1.2	1.6	0.7	0.8
	5	2.7	3.6	1.6	1.4
Average Earnings	1	0.6	0.2	0.2	0.7
	3	1.9	1.5	0.9	2.1
	5	3.0	3.1	1.6	2.6
Employment	1	0.5	0.3	0.2	0.1
	3	0.1	0.7	0.2	0.0
	5	0.2	0.5	0.2	0.0
Current account (% of GDP)	1	-0.4	-0.2	-0.3	-0.4
	3	-0.4	-0.4	-0.3	-0.4
	5	-0.6	-0.4	-0.3	-0.5
Short-term interest rates (% points)	1	0.6	0.5	0.6	0.7
	3	1.1	1.5	1.0	0.7
	5	0.7	1.8	1.1	0.7

Table 7: Investment Up 1% of GDP ex ante
(% changes from base)

	Year	USA	Japan	Euro_12	UK
GDP	1	0.9	0.9	0.7	0.7
	3	0.9	1.1	0.7	0.6
	5	1.1	0.8	0.9	1.0
Consumer	1	0.1	0.2	0.0	0.0
Prices	3	0.9	0.9	0.6	0.8
	5	1.9	1.8	1.2	1.5
Average	1	0.5	0.1	0.3	0.7
Earnings	3	1.7	1.0	0.9	2.4
	5	2.7	1.8	1.6	3.0
Employment	1	0.4	0.3	0.2	0.1
	3	0.3	0.5	0.2	0.0
	5	0.4	0.5	0.2	0.0
Current	1	-0.3	-0.2	-0.3	-0.3
account	3	-0.3	-0.3	-0.3	-0.4
(% of GDP)	5	-0.4	-0.3	-0.3	-0.5
Short-term	1	0.4	0.3	0.5	0.6
interest rates	3	0.7	0.8	0.7	0.7
(% points)	5	0.2	0.9	0.6	0.5

Table 8: Monetary Shock - Interest Rates Up 1% Point
(% changes from base)

	Year	USA	Japan	Euro_12	UK
GDP	1	-0.5	-0.3	-0.5	-0.7
	2	-1.9	-0.9	-1.0	-2.1
Consumer Prices	1	-0.2	-0.0	0.0	-0.3
	2	-1.0	-0.2	-0.4	-1.2
Average Earnings	1	-0.2	0.0	0.1	-0.3
	2	-1.7	-0.2	-0.7	-2.6
Employment	1	-0.2	-0.1	-0.1	-0.1
	2	-0.8	-0.3	-0.3	-0.4
Current account (% of GDP)	1	0.0	0.0	0.0	0.2
	2	0.0	-0.1	0.0	0.6

Table 9: 'Equilibrium' Money Stock + 2% *
(% changes from base)

	Year	USA	Japan	Euro_12	UK
GDP	1	0.3	0.0	0.4	1.2
	3	1.0	0.0	0.6	-0.4
	5	-0.1	0.2	0.3	0.4
Consumer	1	0.1	0.0	0.1	0.4
Prices	3	1.2	0.1	0.9	1.8
	5	2.7	0.4	1.8	1.6
Average	1	0.1	0.0	0.1	0.8
Earnings	3	1.9	0.1	0.9	2.9
	5	2.8	0.3	1.6	1.5
Employment	1	0.1	0.0	0.1	0.2
	3	0.4	0.1	0.2	-0.1
	5	-0.1	0.1	0.1	0.0
Current account	1	0.0	0.0	-0.1	-0.3
(% of GDP)	3	0.0	-0.1	0.0	0.0
	5	0.1	-0.1	0.0	-0.2
Short-term	1	-0.5	-0.2	-1.1	-1.0
interest rates	3	0.0	-0.2	-0.5	0.3
(% points)	5	0.3	-0.2	-0.2	-0.2

* That is, the long run money supply (as given by the equation MON=GDP!-0.1 * RSH) is raised by 2%, with short-term interest rates changing to equate money supply and demand.

Table 10: Monetary Shock - 5% Exchange Rate Depreciation
(% changes from base)

	Year	USA	Japan	Euro_12	UK
GDP	1	0.1	0.2	0.0	0.2
	3	-0.3	0.5	0.0	0.5
	5	0.5	-0.1	0.0	0.3
Consumer	1	0.4	0.3	0.1	0.3
Prices	3	1.4	1.4	0.6	1.1
	5	1.5	2.7	1.1	2.3
Average	1	0.1	0.0	0.1	0.3
Earnings	3	1.0	0.7	0.6	2.4
	5	1.8	1.7	1.0	3.7
Employment	1	0.0	0.1	0.0	0.0
	3	-0.2	0.2	0.1	0.1
	5	0.2	0.0	0.0	0.0
Current Account	1	0.1	0.1	0.1	0.1
(% of GDP)	3	0.4	0.4	0.3	0.7
	5	0.2	0.6	0.3	0.6
Short-term	1	0.2	0.1	0.3	0.3
interest rates	3	0.6	0.6	0.7	1.1
(% points)	5	0.4	1.0	0.5	1.0

Table 11: World Oil Price + $10 pb
(% changes from base)

	Year	USA	Japan	Euro_12	UK
GDP	1	-0.2	-0.2	-0.2	-0.3
	3	-0.9	-1.1	-0.3	-0.3
	5	-0.4	-0.7	-0.1	-0.2
Consumer	1	0.5	0.6	0.3	0.5
Prices	3	1.0	0.7	0.6	0.2
	5	1.2	0.4	0.6	0.2
Average	1	0.1	0.0	0.0	0.0
Earnings	3	0.2	0.1	0.0	-0.7
	5	0.8	-0.2	0.0	0.0
Employment	1	-0.1	-0.1	-0.1	-0.1
	3	-0.5	-0.5	-0.1	0.0
	5	-0.2	-0.4	-0.1	0.0
Current	1	-0.3	-0.3	-0.3	0.2
account	3	-0.3	-0.3	-0.3	0.2
(% of GDP)	5	-0.4	-0.1	-0.2	0.1
Short-term	1	0.2	0.1	0.5	0.3
interest rates	3	0.2	-0.1	-0.1	-0.1
(% points)	5	0.1	-0.4	0.1	0.3

Table 12: Ready Reckoner - GDP + 1%, Balanced Demand Expansion (% change from base)

	Consumer Prices		Unemployment (000's)		Employment		Government Balance (% of GDP)	
	Year1	Year2	Year1	Year2	Year1	Year2	Year1	Year2
US	0.0	0.5	-511	-217	0.4	0.4	0.4	0.3
Japan	0.2	0.6	-199	-287	0.3	0.4	0.3	0.4
Euro_12	0.0	0.5	-397	-471	0.3	0.4	0.4	0.4
UK	0.0	0.5	-28	-47	0.1	0.2	0.7	1.0

The emerging market models

Overview of the project

The OEF World Model has been gradually expanding the coverage of the smaller and emerging market economies over the last ten years. For example, models for Ireland and Portugal (of around 100 equations each) are part of the EURO block and there is extensive coverage of NE Asia in particular (China, Hong Kong, Taiwan and Korea) and smaller scale models on a country-by-country basis for the leading economies of SE Asia, Eastern Europe, and Latin America. South Africa is also detailed.

The Asian crisis clearly illustrated the need to improve information and interlinkages with respect to the SE Asian countries as well as other areas such as Latin America and Eastern Europe. This coverage also needed to focus much more on the balance of payments and financial sectors than is typical in standard small macro models. This review sets out the key features of OEF's emerging market models, addressing how OEF extended these models to include analysis of the interest rate risk premium and 'equilibrium' exchange rates. Example simulations illustrate how these models can assess the impact of financial crises such as increased risk aversion to holding emerging market assets and changes of view on the correct valuation of the exchange rate.

Country Coverage

In the latest phase of development of the OEF World Model, detailed country coverage is available for:

Brazil	Hungary	Thailand	South Africa	Bulgaria
Argentina	Poland	Indonesia	Turkey	Croatia
Chile	Czech Rep	Malaysia	India	Romania
	Russia	Philippines		Slovakia
		Singapore		

These models are designed to look at three critical issues in particular. Firstly, the impact of trade developments in these countries on each other and on the rest of the world. Secondly, the impact the industrialised countries have on the emerging market economies. Thirdly, issues relating to financial risk and capital flows are examined in much greater detail than is common in macro models. Each model has around 70-200 variables (200 for Turkey and Singapore) with full interlinkage with the rest of the OEF World system.

One of the most crucial differences between the new emerging market models and the 'typical' OEF model of OECD countries is the treatment of interest rates and exchange rates. Rather than following the typical monetary policy Taylor Rule, the interest rate function is a mark-up over US rates, with the mark-up determined by financial markets' perceived risk premium for each country as well monetary policy. The risk premium is divided between a general emerging market premium and a country specific premium, including, in local currency terms, devaluation risk. The latter depends on the deviation of the actual exchange rate from its perceived 'equilibrium' rate (broadly a PPP measure). Other risk indicators such as external debt and forex reserves are included in the risk premium assessment. This form of interest rate function enables the model user to examine scenarios in which the perceived risk rises (falls) but also means that care needs to be taken when implementing exchange and interest rate changes.

Exchange rate scenarios

For example, there are broadly three types of exchange rate scenario:

I. The actual exchange rate can be changed directly e.g. a 10% effective devaluation can be imposed. If it is assumed that the actual exchange rate is initially in equilibrium then this shock will drive a wedge between the actual exchange rate and its equilibrium rate and will, therefore, influence interest rates via the risk premium. If the actual rate is devalued but not the 'equilibrium' rate then interest rates will initially fall (as currency revaluation is expected) until other factors such as inflation come into force. This means that there is a monetary policy impact as well as competitiveness effects from devaluation.

II. Both the actual and equilibrium exchange rates can be changed in tandem e.g. both exchange rates are devalued by 10%. This scenario is similar to exchange rate simulations for the OECD-style models (when the model operates a monetary policy following the Taylor Rule). A wedge is not placed between the actual and equilibrium exchange rates and therefore there is not a great impact on the risk premium. The interest rate is chiefly moved by the price effects of the exchange rate movement. Here the dominant effect on the real economy is the change in competitiveness with interest rates being used to dampen the real economy's response and inflationary consequences.

III. The equilibrium exchange rate can be changed e.g. the perceived equilibrium exchange rate can be devalued by 10%. Once again this simulation will move interest rates due to the wedge between the actual and equilibrium exchange rate. Initially, interest rates rise sharply (due to the expected devaluation of the spot exchange rate) but the risk premium will fall back as the actual exchange rate moves towards its equilibrium (this is not instantaneous). In the medium term competitiveness changes will impact upon the real economy and price effects will determine interest rates.

Of course the above scenarios can be performed ex-post or ex-ante, depending on whether it is desirable to have feedback on to the operational variable or not.

Key variables for these exchange rate and interest rate shocks are:

RISKEM – a new 'world' variable which indicates the general emerging market risk premium (i.e. this same variable appears in all the new emerging market models and represents the basic risk premium on US$ denominated debt for all developing economies). This variable can treated as exogenous or be made dependent on event risk (an equation is supplied in the latest version of the model). For example, large movements in the exchange rate of one or more of the developing countries may increase the perceived risk associated with investing in all emerging market economies.

RISKEMC – risk premium on dollar denominated debt (ie excludes exchange rate risk) that is specific to individual emerging market economies – this can be

interpreted as the perceived default risk measure although in the real world other factors (such as liquidity of the market and benchmark issues) may play a role here.

RISKP – the risk premium specific to each country in local currency terms, ie. RISKP is RISKEMC plus exchange rate risk.

RSH - actual local currency short-term interest rate which depends on RISKP and monetary policy (ie this rate may not match the required risk premium).

RXD – the actual spot US$ exchange rate.

RXPPP – the 'PPP equilibrium' exchange rate. This takes account of relative price developments and also the actual trade balance as an equilibrium indicator.

RXDE – the financial market equilibrium rate, i.e. US$ exchange rate adjusted for actual versus "market required" interest rate setting. For example, if monetary policy is relaxed so that RISKP is not fully incorporated into interest rates, then the exchange rate RXDE will signal currency devaluation in order to make the total expected return on the currency meet market requirements post devaluation). Normally, this variable should not be fixed or adjusted in forecasts and scenarios.

INDICATIVE SCENARIO RESULTS
SPOT EXCHANGE RATE (RXD) RAISED 20%
(from 2005 quarter 1, for first year only)

	RUSSIA	**INDONESIA**	**PHILIPPINES**
GDP % change from baseline forecast			
2005	+1.6%	+ 4.4%	+2.6%
2006	+3.7%	+7.5%	+7.9%
Actual exchange rate change (%) from baseline forecast			
2005	+20%	+20%	+20%
2006	+10%	+12%	+8%
Interest rate change from baseline forecast (% points)			
2005	-7.3	-5.7	-3.3
2006	-5.9	-5.2	-4.0

"EQUILIBRIUM" EXCHANGE RATE (RXPPP) RAISED 20%
(from 2005 quarter 1, for two years)

	RUSSIA	INDONESIA	PHILIPPINES
GDP % change from baseline forecast			
2005	-0.8%	-0.9%	-0.7%
2006	+0.8%	+3.2%	+3.5%
Actual exchange rate change (%) from baseline forecast			
2005	+19%	+18%	+19%
2006	+23%	+22%	+12%
Interest rate change from baseline forecast (% points)			
2005	+4.5	+3.1	+4.8
2006	+1.6	+2.1	+1.2

In equilibrium, all these three measures of the exchange rate should be equivalent but sizeable deviations may exist over the short term.

So the model user may create different types of exchange rate scenarios – with different results – depending on the variable used in the model. A change in the actual spot rate (RXD) will be different from a change in the perceived equilibrium rate (RXPPP). The results quoted above for these two alternative shocks may illustrate this difference more clearly.

A special mention should be made for Argentina as the model here includes a particular approach to the policy of sustaining a currency board. The model includes a variable PROBDEV which broadly represents an estimate of the financial market perception of the "risk of devaluation" and which drives the required interest rate risk premium for Argentine debt. Provided the authorities meet the required risk premium, the currency will remain stable against the US$. A similar assessment has been tested for Hong Kong for some time and 'alternative' equations for Hong Kong interest rates are included in the new model (and can be easily 'switched in' by model users if required). Users should refer to the equation help file listing for details.

Example simulations

In order to illustrate the new features of these emerging market models, we can describe some of the simulations that may be carried out, including results for some particular cases.

A higher emerging market risk premium

The new models for emerging market economies all include the general emerging market risk premium, RISKEM, in the individual country risk premium function, RISKEMC, and this is the interest rate typically applied in interest payment calculations for external debt. Domestic debt payments are calculated using the local currency interest rate – this is a function of RISKEMC plus the currency risk assessment (ie RISKP) and terms representing domestic monetary policy (such as the impact of inflation).

Thus interest rate equations in each country model take the form of a mark-up on US rates:

RSH = RSH,US + RISKP + other terms indicating monetary policy setting

And payments on US$ external debt will be calculated as

(RLG,US+RISKEMC)*TDEBT$

With RISKEM the same for all emerging market economies and RISKEMC, RISKP, and RSH, varying from country to country. Clearly this RISKEM premium has varied over time and the rise in this rate was one of the problems which beset all emerging market economies during the financial crises of 1997-1998. This created secondary shocks from the original Thai crisis and formed one of the important channels of contagion across markets.

INDICATIVE SCENARIO RESULTS

EMERGING MARKET RISK PREMIUM RAISED 5 percentage points
(from 2000 quarter 1)

	Turkey	Indonesia	Philippines
GDP % change from baseline forecast			
2000	-0.1%	-2%	-0.1%
2002	-2%	-5%	-0.5%
2005	-3%	-6%	-2%

In order to be able to assess the implications of such changes in the risk premium and its influence across countries, the model can be used to simulate the effects of a rise in RISKEM - this only requires one variable in the system to be changed and all country models will be affected. A rise in key US interest rates has a similar affect across the world, including the OECD countries, but clearly the RISKEM variable will allow us to capture the asymmetric affect of a rise in the emerging market risk premium alone. Nevertheless, as all emerging market economies are affected, the size of the shock can have noticeable repercussions in the OECD economies. For any one developing country, this would probably not be the case.

The results of this simulation are detailed in the table above. For a five point increase in the premium, the GDP losses in the emerging market economies may be as high as 2-3% over three years. For the OECD economies, losses are small, of the order of 0.1-0.3% GDP, with the countries most affected being small open economies such as Taiwan and Korea. For the latter, the consequences might be even larger than stated as the risk premium could also feed into their interest rate settings (this is not directly included in these models in this simulation).

Divergence in results across countries reflects structural differences and baseline dependency – for example, the relative openness of an economy and/or existing debt positions will influence the response to economic shocks. The results also illustrate the importance of the 'equilibrium' concepts in the models – over the medium/long term, in-built mechanisms (for example, in the labour market via

wages) and policy reaction functions will attempt to drive the economies back into equilibrium as defined by potential GDP, the baseline unemployment rate, exchange rate/trade equilibrium and financial market balance (between interest rates and exchange rate/inflation expectations). This 'search' for a path back to equilibrium may take some economies through a high inflation route whilst others see wages and prices fall. For GDP itself, the end-point equilibrium will be changed if investment patterns raise/depress the capital stock during the adjustment process. Thus short term responses can lead to longer term repercussions for both real and nominal variables.

Government debt explodes for Russia, and Indonesia, in this scenario as implied higher interest payments cannot be met and debt rises. The negative current account reflects this interest payment problem. This debt problem then forces the country risk premium even higher, exacerbating the vicious debt spiral. In contrast, the Philippines sees interest rates fall back after three years as an induced current account surplus enables debt to be reduced.

A simulation example: devaluation of the Russian Rouble as a forecast risk and as a counterfactual exercise

The flexibility of the OEF Emerging Market Models as well as the importance of the underlying country fundamentals can be illustrated by comparing exchange rate scenarios for 1999 and 2005 for the case of a Russian rouble devaluation. We first illustrate and compare the results of imposing a **temporary** 20% devaluation on the spot exchange rate (RXD) in 1999 (a counterfactual exercise) with the results of the same exercise imposed in 2005. We secondly impose a **permanent** 20% devaluation on the estimated 'fundamental' exchange rate (i.e. the market perception of the 'fair' rate of exchange, RXPPP) again for both 1999 and 2005.

These exercises illustrate the dependency of the results on the economic situation in a given time period and also the difference in the impact of devaluations driven by adverse long-run fundamentals compared to those driven by fluctuations in the spot rate related to temporary factors. Essentially, undervaluing a currency (eg letting the spot rate drop with no change in the fundamental view) may imply lower local currency interest rates (as an arbitrage condition given expected renewed strength in the currency) while weaker fundamentals will drive local interest rates higher as well as initiating depreciation of the spot rate.

In the first example here, we impose a temporary devaluation in the spot rate, with the fundamental rating unchanged, from the first quarter of 1999 (imposed for one year with the exchange rate adjusting according to the model equations thereafter). In principle, this scenario should improve GDP because of gains in net trade and also a fall in interest rates. However, in 1999, Russia's external debt was at an historic high and the $ debt risk premium (RISKEMC) was also elevated, following Asian financial crisis of 1997-98 and the recent domestic debt default. Hence, in the simulation, after imposing a 20% devaluation of the spot rate (RXD), external debt surges as a % of GDP, rising by almost 20% points in the first year (1 % of which is due to rising total dollar-denominated debt, while the other 19% is due to falling GDP in dollar terms), and there is also a sharp rise in the risk premium (RISKEMC) which curbs the fall in interest rates. Repeating this scenario from 2005, a more favourable debt structure results in a much more muted rise in the risk premium, 0.2 points in the first year, and only a limited surge in external debt (up by only 4.3% of GDP). This allows a sharper decline in local interest rates (stimulating economic activity to a greater extent than in the 1999 case) while the rapid appreciation of the spot rate back towards its equilibrium level helps attenuate inflationary pressures (we note, however, that the fundamental rate is not constant and will also depreciate slightly due to the rise in prices). In the 1999 scenario, local interest rates fall less, thus resulting in about half of the GDP growth observed in the 2005 scenario. As suggested in the discussion above, this kind of temporary devaluation of the spot-rate implies there are a monetary policy impacts (weaker interest rates) as well as the expected competitiveness effects.

These differing responses to a devaluation can be rationalised by making reference to the factors driving RISKEMC, i.e. the risk premium on dollar denominated debt (excluding exchange rate risk) that is specific to individual emerging market economies. In the case of Russia, the perceived default risk measure declined markedly from 1999 to 2005, largely due to changes in the external debt structure.

Indeed, following the default on domestic debt and the Rouble devaluation in the summer of 1998, the Russian economy went through a number of favourable changes. Firstly, high world energy prices contributed to a period of sustained current account surpluses. This, along with lower capital flight, allowed Russia to both boost its foreign exchange reserves and prepay some external debt. As a result,

the country's international liquidity position has continued to improve, making it less crisis-prone short-term. Furthermore, fiscal retrenchment has been notable; the budget deficit turning around from more than a 5% of GDP deficit in 1998 to a surplus of almost 3% of GDP in 2004. Structural reforms, (relating to taxation, labour laws, banking, land ownership, business regulation and pensions) are also ongoing. More importantly, Russia's short term risk outlook has benefited from a significant decline in external vulnerability. In its recent assessment of the Russian economy, the IMF also judged that Russia's resilience to external shocks has been 'substantially reduced over the last few years'. Foreign exchange reserves have risen to record levels, and the aforementioned stronger fiscal position has removed the need for external borrowing. Thus the stock of external debt has declined significantly while the real exchange rate remains well below its pre-crisis levels.

For the second simulation, the tables below illustrate the case of a **permanent** 20% devaluation of the equilibrium (fundamental) exchange rate (RXPPP). In these examples, a change in fundamentals and/or a permanent shift in market assessments of Russia's economic potential drive the devaluation and a negative overall outcome. In both cases, the interest rate response is positive (due to the expected depreciation of the spot exchange rate as RXPPP "devalues"). Again, the 1999 scenario results in a relatively worse macroeconomic result than for 2005. Indeed, the 1999 scenario yields negative GDP growth rates throughout the simulation period (in spite of competitiveness gains that should improve net trade) while in the 2005 case, the negative output effect is minor and only lasts for the first year. The higher risk premium in the 1999 case leads to a more pronounced and protracted local interest rate response, which stifles growth and investment.

We clearly see from these example scenarios the important baseline sensitivity of results from the model – which also corresponds to observed behaviour and opinions.

While the scenarios from 2005 are forecast risks, those from 1999 are what are known as "counterfactuals" – that is we take the data of what actually happened and the model of the economy and use this information and model to drive an assessment of a "what if" question in the historic context – that is what might have happened if certain key variables had behaved differently to the actual outcome.

Alternative "what if" questions could include alternative debt profiles or oil prices (a rise in short term debt or a weaker price in 1999-2000 would have been much more negative for Russia then than it would be now, for example, for much the same reasons as the other arguments made above, due to the structure and size of debt, the risk premium etc).

INDICATIVE SCENARIO RESULTS for RUSSIA
SPOT EXCHANGE RATE (RXD) DEVALUED 20%
(Percentage change from baseline forecast -
shock imposed from 1999 quarter 1, for first year only)

	Gross Fixed Investment	GDP	Employment	Consumer Prices	Risk Premium	Interest Rate (%)	Exchange Rate (% of GDP)	Current Account Bal.	External Debt (% of GDP)
1999	3.4	0.7	0.1	4.1	2.9	-3.3	20.0	2.2	17.9
2000	4.6	1.8	0.4	5.9	2.1	-1.9	12.6	0.9	6.5
2001	4.2	2.0	0.7	6.9	0.8	-1.9	8.9	-1.4	3.2
2002	2.2	1.2	0.5	8.3	2.2	-0.2	11.2	-1.1	5.0
2003	1.0	0.4	0.2	9.4	2.0	0.6	11.4	-0.4	4.5

INDICATIVE SCENARIO RESULTS for RUSSIA
"EQUILIBRIUM" EXCHANGE RATE (RXPPP) DEVALUED 20%
(Percentage change from baseline forecast - permanent shock)

	Gross Fixed Investment	GDP	Employment	Consumer Prices	Risk Premium	Interest Rate (%)	Exchange Rate	Current Account Bal. (% of GDP)	External Debt (% of GDP)
1999	-3.5	-1.3	-0.4	3.6	2.7	6.9	19.0	3.4	17.7
2000	-3.9	-1.8	-0.9	9.2	3.8	7.7	24.9	6.2	17.0
2001	-0.7	-0.9	-0.7	12.1	1.5	4.2	20.7	1.6	11.7
2002	-1.3	-1.1	-0.6	14.3	3.1	4.5	20.6	0.3	11.9
2003	-1.7	-1.4	-0.6	16.0	3.4	3.9	21.0	0.6	10.9

INDICATIVE SCENARIO RESULTS for RUSSIA
SPOT EXCHANGE RATE (RXD) DEVALUED 20%
(Percentage change from baseline forecast -
shock imposed from 2005 quarter 1, for first year only)

	Gross Fixed Investment	GDP	Employment	Consumer Prices	Risk Premium	Interest Rate (%)	Exchange Rate	Current Account Bal. (% of GDP)	External Debt (% of GDP)
2005	6.1	1.6	0.4	4.0	0.2	-7.3	20.0	1.2	4.3
2006	8.6	3.7	1.0	6.0	0.0	-5.9	9.5	0.5	-0.2
2007	4.9	2.9	1.1	5.9	-0.4	-2.3	3.9	-0.6	-2.8
2008	2.9	1.7	0.7	6.7	-0.6	-2.0	6.9	-0.4	-2.8
2009	1.8	1.1	0.4	7.5	-0.4	-1.1	7.9	-0.1	-3.3

INDICATIVE SCENARIO RESULTS for RUSSIA
"EQUILIBRIUM" EXCHANGE RATE (RXPPP) DEVALUED 20%
(Percentage change from baseline forecast - permanent shock)

	Gross Fixed Investment	GDP	Employment	Consumer Prices	Risk Premium	Interest Rate (%)	Exchange Rate	Current Account Bal. (% of GDP)	External Debt (% of GDP)
2005	-1.8	-0.8	-0.3	3.5	0.1	4.5	19.1	2.5	4.8
2006	2.7	0.8	-0.1	8.6	0.0	1.6	23.3	3.4	4.2
2007	2.2	0.9	0.1	11.5	-0.4	3.6	19.5	2.6	1.3
2008	1.7	0.5	0.0	13.8	-0.7	2.4	19.6	2.1	0.0
2009	1.1	0.1	0.0	15.5	-0.4	1.8	19.5	1.7	-1.3

Recreating the emerging market crash

The results quoted above, while negative for GDP in the emerging market economies, do not generate large swings in their exchange rates, and are therefore not inflationary. However, most of the crisis economies suffered a collapse in their currency valuations as the crisis gathered pace. This seems to have involved at least some overshooting of equilibrium exchange rates. In the models, such a shock can be 'recreated' by assuming that the crisis evolved as follows:

- Exchange rates were suddenly perceived as overvalued, causing actual rates to start an upward spiral and The risk premium for emerging market debt rose in response to fears of defaults.

- Individual economies adjusted interests rates upwards but not as far as markets required to stabilise currencies given the new, higher risk premium and perceived exchange rate overvaluation – thus some currencies moved beyond equilibrium.

- Currency movements were so rapid that overshooting was likely to be amplified.

- Interest rates then began to fall as currency undervaluation was recognised and a semblance of 'normality' and stability returned.

Part of the problem facing the crisis economies was that so much happened *simultaneously*. Some of the undoubted non-linearity - perhaps discontinuity - in the system cannot be easily captured in a 'standard' macro model which has to serve many roles. But the linkages implemented in the new emerging market models do allow us to 'mimic' at least part of the shock that struck a number of economies from mid-1997.

INDICATIVE SCENARIO RESULTS

RECREATING the "EMERGING MARKET CRASH"

	Indonesia	**Thailand**	**Malaysia**
(1) from 1999 quarter 1			
GDP % change from baseline forecast			
1999	-3%	-1%	-1%
2000	-5%	0%	+2%
2001	-6%	+1%	+2%
(2) from 1997 quarter 1			
GDP % change from baseline forecast			
1997	-7%	-3%	-3%
1998	-8%	-2%	-3%
1999	-5%	0%	-0.2%

For example, the most important features of the crisis as described above can be reproduced by a simulation in which *both* the general emerging market risk premium (RISKEM variable) is increased and an upward adjustment is made to the "fundamental equilibrium" exchange rate (the RXPPP variable in the model). This creates both a large impact effect on interest rates and a devaluation spiral.

For illustrative purposes, we assume only a 10% equilibrium exchange rate adjustment and a 5 point increase in the emerging market risk premium (as above). The effects of this simulation point to rapid exchange rate devaluation, even overshooting the new equilibrium rate, in spite of much higher interest rates. Inflation surges in the first one/two years but the outcome then depends on the reaction of the labour market and monetary policy setting. Real GDP typically falls steeply for two years before growth gradually recovers. The scale of losses for the US and Europe are very much in-line with estimates widely quoted for the effects of the Asian crisis – around a quarter to one half point off GDP over one to two years.

The table above covers the results across countries for the scenario run from 1999 first quarter. However, in order to illustrate the point made above concerning baseline dependency, we indicate in this overview table the difference in results for the main Asian "3" crisis countries for the scenario run from 1999 and from 1997.

Interest rates for Thailand and Malaysia show about double the reaction for the scenario operated from 1997, hence the larger falls in GDP. The weaker rate reaction from 1999 can be linked to the changes seen in exchange and inflation rates, and risk criteria such as the trade surplus/deficit, over the crisis period. In the actual event the scale of shock was much larger than the changes assumed here – suggesting that results quoted could even be multiplied by 2 or 3.

China devalues the Yuan by 20%

To illustrate the impact of an endogenous response of the general emerging markets risk premium, this scenario assumes that China devalues the Yuan by 20%. Such a devaluation increases the perceived risk of other emerging markets having to devalue and suffering renewed debt and growth problems. Thus, as result, the general emerging market risk premium is estimated to rise. RISKEM in the model rises by about 50bps in the aftermath of a Chinese devaluation and this impacts upon all emerging market economies. In sum, a devaluation of the Yuan spreads to the other emerging markets via two mechanisms: trade linkages and the risk premium associated with emerging markets. The latter being an important channel of contagion compared with many models which do not cover the concept of risk in this way.

As outlined above there is an element of baseline dependency when assessing the impact of changes in risk premium on the SE Asian economies. Therefore, it would be expected that the impact effect of a rise in the risk premium would be larger in those emerging markets, which still have large perceived debt problems (eg Russia, Indonesia), even if the effects of the trade linkages might be smaller. The ex-crisis countries, such as Thailand, have become effectively increasingly immune to financial market contagion due to improved fundamentals (trade account improvements and reduced inflation especially).

INDICATIVE SCENARIO RESULTS

GDP %differences from baseline

	2000
CHINA	1.0
INDONESIA	-0.3
PHILIPPINES	-0.1
MALAYSIA	-0.2
THAILAND	-0.2
HONG KONG	-2.7
KOREA	-0.1
ARGENTINA	-0.3
BRAZIL	-0.2
SINGAPORE	-0.4

Other simulations

For the emerging market models, it is also possible to do 'standard' simulations of monetary and real shocks as for the main OECD countries. In appendix E, we present the results of an expansionary fiscal policy, an increase in interest rates, a rise in the emerging market risk premium, an exchange rate depreciation and an increase in world oil prices.

Notice that the emerging countries are taken altogether as a bloc in these simulations: i.e. each shock is applied to every single country of the bloc, although the results are displayed for countries separately. The results may be different if the shocks are applied separately to each country concerned.

Annex A: Countries covered in the Oxford World Macroeconomic Model

1. Countries covered in detail

US
Japan
Germany
France
Italy
UK
Canada
China

Spain
Netherlands
Belgium
Switzerland
Austria
Sweden
Australia
Mexico
South Korea
Taiwan
Hong Kong

Denmark
Finland
Norway
Ireland
Portugal
Bulgaria
Croatia
Greece
Romania
Slovakia

Poland
Hungary
Russia
Czech Republic
Argentina
Brazil
Chile
Indonesia
Malaysia
Philippines
Singapore
Thailand
South Africa
Turkey
India

2. Countries covered in trading blocs

Rest of the OECD
Greece
Iceland
Luxembourg
New Zealand

OPEC
Algeria
Iran
Iraq
Nigeria
Saudi Arabia
Venezuela

Eastern Europe
Bulgaria
Kazakstan
Romania
Slovak Republic
Ukraine

Africa
Cameroon
Egypt
Kenya
Morocco
South Africa
Sudan
Tunisia
Uganda

Latin America
Bolivia
Colombia
Costa Rica
Dominican Republic
Ecuador
Panama
Paraguay
Peru
Uruguay

Rest of World
Bangladesh
India
Israel
Myanmar
Pakistan
Syria
Vietnam

Annex B: Technical Structure of the Oxford World Macroeconomic Model

The equations which make up the Oxford World Model are set out in the various EQN files (e.g. see UKEQNS.HLP for details of the UK model). These typically fall into two groups:

(i) Behavioural relationships - e.g. relating wages to prices, productivity and unemployment

(ii) Technical relationships - e.g. the national income identities.

It is the behavioural relationships which represent the analytical content of the Oxford Model. In general, these equations have a standard 'error correction' format (ie simple control feedback loops), where:

$$\Delta Y_t = \alpha_0 \Delta Y_{t-1} + \alpha_1 \Delta X_t + \alpha_2 \Delta X_{t-1} - \beta (Y_{t-1} - \gamma X_{t-1}) + R_t \qquad (1)$$

with: Y=dependent variable
X=explanatory variable(s)
R= residual
Δ= first-difference operator

The term in parentheses in equation (1) represents the long-run relationship between X and Y. That is, when the model has reached (static) equilibrium - so that $\Delta Y_t = \Delta Y_{t-1} = \Delta X_t = \Delta X_{t-1} = 0$ - then $Y_t = \gamma X_t$. Note, if Y and X are expressed in logarithmic terms, this equation implies that a 1% increase in X will lead eventually to a rise of γ% in Y (i.e. 'γ' represents the long term elasticity of Y with respect to X). Economic theory is used to determine the appropriate explanatory variables to include in X and also determine any restrictions on the value of γ (e.g. in the context of an equation relating to wages and prices, static homogeneity would imply that γ=1). Cointegration techniques are used to estimate this long term relationship.

Of course, economies are frequently out of equilibrium. The terms in ΔY and ΔX in equation (1) therefore seek to model the adjustment of Y back to its long term relationship with X (i.e. the 'dynamics' of the equation). So, if there is a 1% sustained rise in X then:

-Y will rise immediately by α_1%

-In the next quarter, Y will rise by $[(1 + \alpha_0 - \beta)\ \alpha_1 + \alpha_2 + \beta\gamma]$%, and so on until..

-.....Eventually, Y will rise by γ%, which represents the end of the adjustment process

The speed with which Y adjusts to its long run relationship with X depends, in particular, on the size of coefficient β. Note for equation (1) to be stable, β must lie between 0 and 1. However, the closer β is to -1, the faster the equation will reach equilibrium following a shock. For short term forecasts, it is important to understand the dynamics of the model equations as the long-term properties. These are illustrated for some of the key equations in the G6 models in tables 1-5 in the main text.

Annex C: A Schematic Model:

The following is a highly condensed version of a typical Oxford country model. The idea is to present the model's key equations in a relatively accessible fashion, so that key inter-variable relationships can be seen clearly. We stress that this is just a small part of the model template - they typically consist of more than 200 variables - however, these equations might be thought of as defining the model's theoretical core. As such, the functional forms are identical across all the countries covered.

The equations presented are all "long-run" relationships; i.e they abstract from dynamics. We adhere to the convention that lower case mnemonics denote logs of variables.

Demand

goods market

c = a1*pedy + (1-a1)*(penw-pc) - a2*rrh	(consumption)
st = gdp + e1*time	(inventory level)
mgnf = tfe + c1*wcr + c2*time	(non-fuel imports)
xgnf = wt -d1*wcr + d2*time	(non-fuel exports)

money market

mon = b1*gdp + (1-b1)*(prnw-pc) - b2*RSH	(real money balances)
RLG = b3*RSH + (1-b3)*RLG,US + b4*GGDBT/GDP!	(long bond rate)
rxd = rxd(expected) + log(1+RSH,US/400) - log(1+RSH/400) + RISK	(exchange rate)

Supply

capital accumulation

K = (1-DELTA)*K(-1) + IPNR [2] (capital stock)

IPNR = K(-1) + f1*QR + short run GDP effects (non-residential investment)

RRH = f6*RSH + (1-f6)*RLG - 100*inflation (expected) (real interest rate)

labour market and the nairu

LS = PART*POPW (labour supply)

part = f2*(er-pgdp) (participation rate)

nairu = f3*WEDGE[3] (natural rate of unemployment)

ESTAR = (1-NAIRU/100)*LS (natural employment level)

yhat = α*estar + (1-α)*k(-1) + g1*trend (potential output)

cumod = gdp - yhat (output gap)

epr = gdp -er +pgdp (employment)

er = pgdp + gdp - epr - f4*(up - nairu) (average earnings)

prices

pgdp = er -gdp + epr + f5*cumod (gdp deflator)

pmgnf = h1*pgdp + h2*(wpmf+rxd) + (1-h1-h2)*(wpc+rxd) (import prices)

cpix = j1*pgdp + (1-j1)*pm (consumer prices)

Government Policy

monetary

ΔRSH = l1*(inflation - inflation(-1)) + l2*(inflation - target) + l3*cumod ('Taylor' rule)

[2] delta is potentially endogenised as a function of the output gap; this is not the case in current versions of the models

[3] wedge is the (log) difference between the real product wage and real take-home pay, and consists of direct, indirect and payroll taxes, as well as producer prices relative to consumer prices.

fiscal

Government spending and major tax rates all currently exogenous

Rest of the World

WT = trade-weighted average of trading partners' imports (world trade)

WPMF = trade-weighted average of import prices (world prices)

WPC = weighted average of world non-fuel commodity prices

VARIABLE DEFINITIONS (not elsewhere specified)

pedy; real personal disposable income
penw; personal sector net financial wealth
pc; personal consumption deflator
gdp; gross domestic product
tfe; total final expenditure
wcr; relative unit labour costs
prnw; private sector net financial wealth
ggdbt; government gross financial debt
gdp!; nominal GDP
qr; Tobin's "q"
popw; population aged 16-64
trend; Solow residual

Annex D: Detailed Simulation results for G3 and UK

WTUS1.DB: US government consumption +1% of GDP

U.S.A. DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	REAL PERSONAL INCOME	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EFFECTIVE EXCHANGE RATE	CURRENT ACCOUNT (% OF GDP!)	GOVERNMENT BALANCE (% OF GDP!)
2005	0.3	0.7	1.1	1.9	-599.9	0.5	0.6	0.0	0.6	0.6	-0.4	-0.7
2006	0.4	1.0	1.2	2.1	-259.8	0.5	1.7	0.6	1.2	1.2	-0.4	-0.8
2007	-0.1	0.5	0.4	-0.2	269.1	0.1	1.9	1.2	1.1	0.8	-0.4	-1.1
2008	-0.5	0.1	0.0	-0.6	199.3	0.0	2.1	1.9	0.7	-0.5	-0.5	-1.2
2009	-0.3	0.1	0.4	0.9	-138.3	0.2	3.0	2.7	0.7	-1.4	-0.6	-1.2

WTUS2.DB: US business investment +1% of GDP (ex ante)

U.S.A. DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	REAL PERSONAL INCOME	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EFFECTIVE EXCHANGE RATE	CURRENT ACCOUNT (% OF GDP!)	GOVERNMENT BALANCE (% OF GDP!)
2005	0.2	0.5	0.9	2.8	-493.6	0.4	0.5	0.1	0.4	0.4	-0.3	0.3
2006	0.5	0.8	1.1	2.7	-258.3	0.4	1.4	0.4	0.7	0.6	-0.3	0.3
2007	0.3	0.8	0.9	2.0	-52.3	0.3	1.7	0.9	0.7	0.2	-0.3	0.2
2008	0.3	0.6	0.9	2.1	-77.5	0.3	2.2	1.4	0.4	-0.7	-0.4	0.2
2009	0.5	0.6	1.1	2.4	-146.3	0.4	2.7	1.9	0.2	-1.5	-0.4	0.3

WTUS3.DB: US short-term interest rate +1% point

U.S.A. DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	REAL PERSONAL INCOME	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EFFECTIVE EXCHANGE RATE	CURRENT ACCOUNT (% OF GDP!)	GOVERNMENT BALANCE (% OF GDP!)
2005	-0.4	-0.1	-0.5	-0.7	296.0	-0.2	-0.2	-0.2	1.0	1.9	0.0	-0.2
2006	-1.5	-0.8	-1.9	-3.4	970.1	-0.8	-1.7	-1.0	1.0	3.2	0.0	-0.7

WTUS4.DB: US equilibrium money supply +2%

U.S.A. DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	REAL PERSONAL INCOME	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EFFECTIVE EXCHANGE RATE	CURRENT ACCOUNT (% OF GDP!)	GOVERNMENT BALANCE (% OF GDP!)
2005	0.3	0.1	0.3	0.4	-169.5	0.1	0.1	0.1	-0.5	-1.0	0.0	0.1
2006	0.7	0.4	0.9	1.7	-446.0	0.4	0.9	0.5	-0.2	-1.2	0.0	0.3
2007	0.8	0.5	1.0	1.7	-261.1	0.4	1.9	1.2	0.0	-1.4	0.0	0.3
2008	0.4	0.3	0.5	0.5	73.5	0.2	2.5	2.0	0.2	-1.7	0.1	0.2
2009	-0.1	-0.1	-0.1	-0.4	304.6	-0.1	2.8	2.7	0.3	-2.0	0.1	0.1

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WTUS5.DB: US Dollar 5% depreciation

U.S.A. DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	REAL PERSONAL INCOME	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EFFECTIVE EXCHANGE RATE	CURRENT ACCOUNT (% OF GDP!)	GOVERNMENT BALANCE (% OF GDP!)
2005	-0.2	-0.3	0.1	0.6	-111.7	0.0	0.1	0.4	0.2	-5.1	0.1	0.0
2006	-0.6	-0.7	0.0	1.2	-153.6	0.0	0.7	1.2	0.5	-5.1	0.3	-0.1
2007	-1.0	-0.7	-0.3	0.7	68.3	-0.2	1.0	1.4	0.6	-5.1	0.4	-0.2
2008	-1.0	-0.5	-0.2	0.8	-3.3	-0.1	1.1	1.4	0.4	-5.1	0.3	-0.1
2009	-0.4	0.1	0.5	1.9	-282.5	0.2	1.8	1.5	0.4	-5.1	0.2	0.1

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WTUS6.DB: World oil price + US$ 10 per barrel

U.S.A. DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	REAL PERSONAL INCOME	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EFFECTIVE EXCHANGE RATE	CURRENT ACCOUNT (% OF GDP!)	GOVERNMENT BALANCE (% OF GDP!)
2005	-0.3	-0.4	-0.2	-0.2	64.5	-0.1	0.1	0.5	0.2	-0.3	-0.3	-0.1
2006	-0.7	-0.7	-0.7	-1.0	271.0	-0.3	0.3	0.8	0.3	0.0	-0.3	-0.3
2007	-1.1	-0.9	-0.9	-1.3	370.4	-0.5	0.2	1.0	0.1	-0.1	-0.3	-0.4
2008	-1.0	-0.9	-0.8	-0.8	197.9	-0.4	0.4	1.1	0.0	-0.3	-0.4	-0.3
2009	-0.7	-0.6	-0.4	0.1	66.8	-0.2	0.8	1.2	0.1	-0.2	-0.4	-0.2

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WTUS7.DB: Ready reckoner: GDP +1%, balanced demand expansion

U.S.A. DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	REAL PERSONAL INCOME	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EFFECTIVE EXCHANGE RATE	CURRENT ACCOUNT (% OF GDP!)	GOVERNMENT BALANCE (% OF GDP!)
2005	1.0	0.6	1.0	1.3	-511.1	0.4	0.6	0.0	0.5	0.5	-0.2	0.4
2006	1.0	0.8	1.0	1.4	-216.7	0.4	1.3	0.5	1.0	1.0	-0.2	0.3
2007	1.0	0.7	1.0	1.2	-162.0	0.4	1.9	1.0	1.2	0.9	-0.3	0.3
2008	1.0	0.7	1.0	1.3	-134.4	0.4	2.8	1.9	1.2	0.2	-0.3	0.3
2009	1.0	0.5	1.0	1.3	-110.1	0.4	3.8	2.8	1.3	-0.6	-0.4	0.3

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WTJAP1.DB: Japanese government consumption +1% of GDP

JAPAN DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	REAL PERSONAL INCOME	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EXCHANGE RATE PER DOLLAR	CURRENT ACCOUNT (% OF GDP!)	GOVERNMENT BALANCE (% OF GDP!)
2005	0.1	0.3	1.2	1.6	-222.5	0.3	0.2	0.2	0.5	-0.9	-0.2	-0.7
2006	0.5	0.6	1.7	2.2	-437.8	0.7	0.7	0.8	0.8	-1.6	-0.3	-0.5
2007	0.5	0.7	1.7	1.8	-474.8	0.7	1.5	1.6	1.5	-2.2	-0.4	-0.6
2008	0.1	0.6	1.1	0.9	-400.8	0.6	2.4	2.6	1.9	-2.0	-0.5	-1.0
2009	-0.3	0.5	0.5	0.0	-376.8	0.5	3.1	3.6	1.8	-0.6	-0.4	-1.4

WTJAP2.DB: Japanese business investment +1% of GDP (ex ante)

JAPAN DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	REAL PERSONAL INCOME	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EXCHANGE RATE PER DOLLAR	CURRENT ACCOUNT (% OF GDP!)	GOVERNMENT BALANCE (% OF GDP!)
2005	0.1	0.2	0.9	1.8	-177.9	0.3	0.1	0.2	0.3	-0.7	-0.2	0.2
2006	0.5	0.4	1.2	1.9	-308.9	0.5	0.5	0.5	0.4	-0.9	-0.2	0.4
2007	0.5	0.5	1.1	1.5	-296.9	0.5	1.0	0.9	0.8	-1.3	-0.3	0.3
2008	0.3	0.5	0.9	1.2	-254.4	0.4	1.4	1.4	1.0	-1.0	-0.3	0.2
2009	0.2	0.5	0.8	1.1	-285.6	0.5	1.8	1.8	0.9	-0.2	-0.3	0.1

WTJAP3.DB: Japanese short-term interest rate +1% point

JAPAN DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	REAL PERSONAL INCOME	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EXCHANGE RATE PER DOLLAR	CURRENT ACCOUNT (% OF GDP!)	GOVERNMENT BALANCE (% OF GDP!)
2005	-0.3	0.0	-0.3	-0.3	36.8	-0.1	0.0	0.0	0.1	1.8	0.0	-0.1
2006	-0.8	-0.1	-0.9	-1.1	195.3	-0.3	-0.2	-0.2	-0.2	3.1	-0.1	-0.4

WTJAP4.DB: Japanese equilibrium money supply +2%

JAPAN DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	REAL PERSONAL INCOME	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EXCHANGE RATE PER DOLLAR	CURRENT ACCOUNT (% OF GDP!)	GOVERNMENT BALANCE (% OF GDP!)
2005	0.0	0.0	0.0	0.0	-4.0	0.0	0.0	0.0	-0.2	0.0	0.0	0.0
2006	0.2	0.0	0.1	0.1	-26.8	0.0	0.0	0.0	-0.2	-0.2	0.0	0.1
2007	0.3	0.0	0.2	0.3	-54.7	0.1	0.1	0.1	-0.2	-0.2	-0.1	0.1
2008	0.3	0.0	0.2	0.3	-69.0	0.1	0.2	0.2	-0.2	-0.1	-0.1	0.1
2009	0.2	-0.1	0.2	0.2	-71.6	0.1	0.3	0.4	-0.2	0.0	-0.1	0.1

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WTJAP5.DB: Yen 5% depreciation

JAPAN DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	REAL PERSONAL INCOME	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EXCHANGE RATE PER DOLLAR	CURRENT ACCOUNT (% OF GDP!)	GOVERNMENT BALANCE (% OF GDP!)
2005	-0.1	-0.2	0.2	0.4	-41.6	0.1	0.0	0.3	0.1	5.0	0.1	0.1
2006	-0.2	-0.3	0.4	0.9	-135.6	0.1	0.3	0.8	0.3	5.0	0.3	0.1
2007	-0.3	-0.3	0.5	1.0	-186.6	0.2	0.7	1.4	0.6	5.0	0.4	0.1
2008	-0.6	-0.4	0.3	0.6	-171.5	0.1	1.2	2.1	0.9	5.0	0.5	0.0
2009	-0.9	-0.5	-0.1	0.1	-140.3	0.0	1.7	2.7	1.0	5.0	0.6	-0.2

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WTJAP6.DB: World oil price + US$ 10 per barrel

JAPAN DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	REAL PERSONAL INCOME	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EXCHANGE RATE PER DOLLAR	CURRENT ACCOUNT (% OF GDP!)	GOVERNMENT BALANCE (% OF GDP!)
2005	-0.3	-0.4	-0.2	-0.2	17.3	-0.1	0.0	0.6	0.1	0.2	-0.3	0.0
2006	-0.8	-0.6	-0.7	-0.7	92.1	-0.3	0.1	0.7	0.1	0.2	-0.3	-0.2
2007	-1.2	-0.8	-1.1	-1.3	200.8	-0.5	0.1	0.7	-0.1	0.2	-0.3	-0.4
2008	-1.2	-0.8	-1.1	-1.3	229.1	-0.5	-0.1	0.6	-0.3	0.3	-0.2	-0.4
2009	-0.9	-0.8	-0.7	-0.6	140.0	-0.4	-0.2	0.4	-0.4	0.5	-0.1	-0.3

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WTJAP7.DB: Ready reckoner: Japanese GDP +1%, balanced demand expansion

JAPAN DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	REAL PERSONAL INCOME	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EXCHANGE RATE PER DOLLAR	CURRENT ACCOUNT (% OF GDP!)	GOVERNMENT BALANCE (% OF GDP!)
2005	1.0	0.3	1.0	1.1	-199.3	0.3	0.2	0.2	0.4	-0.8	-0.1	0.3
2006	1.0	0.3	1.0	1.0	-286.8	0.4	0.6	0.6	0.5	-1.0	0.0	0.4
2007	1.0	0.4	1.0	0.8	-281.7	0.4	1.0	1.1	1.0	-1.5	-0.1	0.3
2008	1.0	0.4	1.0	0.7	-343.4	0.5	1.5	1.8	1.3	-1.4	-0.1	0.2
2009	1.0	0.4	1.0	0.7	-453.4	0.7	2.2	2.6	1.5	-0.8	-0.1	0.1

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WTEUR1.DB: Euro_12 government consumption +1% of GDP

EURO 12 ZONE DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	REAL PERSONAL INCOME	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EXCHANGE RATE PER DOLLAR	CURRENT ACCOUNT (% OF GDP!)	GOVERNMENT BALANCE (% OF GDP!)
2005	0.0	0.5	0.8	1.0	-320.8	0.2	0.2	0.0	0.6	1.0	-0.3	-1.0
2006	-0.1	0.2	0.6	0.7	-309.2	0.2	0.6	0.4	1.1	1.6	-0.3	-1.2
2007	-0.1	-0.2	0.5	0.4	-251.8	0.2	0.9	0.7	1.0	1.1	-0.3	-1.3
2008	-0.1	-0.3	0.5	0.3	-193.8	0.2	1.2	1.2	1.0	0.8	-0.3	-1.4
2009	0.0	-0.3	0.5	0.4	-177.8	0.2	1.6	1.6	1.1	0.4	-0.3	

WTEUR2.DB: Euro_12 business investment +1% of GDP

EURO 12 ZONE DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	REAL PERSONAL INCOME	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EXCHANGE RATE PER DOLLAR	CURRENT ACCOUNT (% OF GDP!)	GOVERNMENT BALANCE (% OF GDP!)
2005	0.0	4.8	0.7	1.3	-292.1	0.2	0.3	0.0	0.5	0.9	-0.3	0.2
2006	0.0	4.8	0.7	1.1	-310.8	0.2	0.6	0.3	0.8	1.2	-0.3	0.2
2007	0.1	4.8	0.7	1.0	-285.0	0.2	0.9	0.6	0.7	0.7	-0.3	0.2
2008	0.2	4.8	0.7	1.0	-243.4	0.2	1.3	0.9	0.7	0.3	-0.3	0.2
2009	0.4	4.7	0.9	1.2	-220.7	0.2	1.6	1.2	0.6	-0.2	-0.3	0.3

WTEUR3.DB: European short-term interest rates +1% point

EURO 12 ZONE DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	REAL PERSONAL INCOME	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EXCHANGE RATE PER DOLLAR	CURRENT ACCOUNT (% OF GDP!)	GOVERNMENT BALANCE (% OF GDP!)
2005	-0.5	-0.8	-0.5	-0.6	191.3	-0.1	-0.1	0.0	1.0	0.1	0.0	-0.3
2006	-0.9	-1.7	-1.0	-1.4	456.2	-0.3	-0.7	-0.4	0.6	-1.0	0.0	-0.6

WTEUR4.DB: European equilibrium money supply +2%

EURO 12 ZONE DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	REAL PERSONAL INCOME	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EXCHANGE RATE PER DOLLAR	CURRENT ACCOUNT (% OF GDP!)	GOVERNMENT BALANCE (% OF GDP!)
2005	0.4	0.7	0.4	0.5	-166.3	0.1	0.1	0.1	-1.1	-2.1	-0.1	0.3
2006	0.6	1.2	0.6	0.9	-296.3	0.2	0.6	0.4	-0.7	-1.6	0.0	0.4
2007	0.6	1.2	0.6	0.8	-297.2	0.2	0.9	0.9	-0.5	-1.3	0.0	0.4
2008	0.6	1.0	0.5	0.6	-208.4	0.2	1.3	1.4	-0.3	-1.3	0.0	0.4
2009	0.4	0.7	0.3	0.4	-92.4	0.1	1.6	1.8	-0.2	-1.2	0.0	0.3

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WTEUR5.DB: Euro currency 5% depreciation

EURO 12 ZONE DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	REAL PERSONAL INCOME	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EXCHANGE RATE PER DOLLAR	CURRENT ACCOUNT (% OF GDP!)	GOVERNMENT BALANCE (% OF GDP!)
2005	-0.1	0.0	0.0	0.3	-57.1	0.0	0.1	0.1	0.3	-5.0	0.1	0.1
2006	-0.1	0.1	0.0	0.6	-125.1	0.1	0.3	0.3	0.5	-5.0	0.3	0.2
2007	-0.1	0.1	0.0	0.6	-138.4	0.1	0.6	0.6	0.7	-5.0	0.3	0.1
2008	-0.2	-0.1	0.0	0.4	-89.2	0.1	0.8	0.9	0.7	-5.0	0.3	0.1
2009	-0.2	-0.3	0.0	0.2	-5.1	0.0	1.0	1.1	0.5	-5.0	0.3	0.1

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WTEUR6.DB: World oil price + US$ 10 per barrel

EURO 12 ZONE DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	REAL PERSONAL INCOME	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EXCHANGE RATE PER DOLLAR	CURRENT ACCOUNT (% OF GDP!)	GOVERNMENT BALANCE (% OF GDP!)
2005	-0.3	-0.3	-0.2	-0.2	67.5	-0.1	0.0	0.3	0.5	0.5	-0.3	-0.1
2006	-0.4	-0.4	-0.3	-0.3	140.5	-0.1	0.0	0.5	0.1	-0.1	-0.3	-0.2
2007	-0.4	-0.4	-0.3	-0.3	173.6	-0.1	0.0	0.6	-0.1	0.0	-0.3	-0.2
2008	-0.4	-0.2	-0.2	-0.1	126.5	-0.1	0.0	0.5	-0.1	0.2	-0.3	-0.2
2009	-0.4	-0.1	-0.1	0.0	72.4	-0.1	0.0	0.6	0.1	0.3	-0.2	-0.2

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WTEUR7.DB: Ready reckoner: Euro_12 GDP +1%, balanced demand expansion

EURO 12 ZONE DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	REAL PERSONAL INCOME	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EXCHANGE RATE PER DOLLAR	CURRENT ACCOUNT (% OF GDP!)	GOVERNMENT BALANCE (% OF GDP!)
2005	1.2	1.0	1.0	1.3	-397.3	0.3	0.4	0.0	0.8	1.3	-0.5	0.4
2006	1.3	1.0	1.0	1.2	-471.0	0.4	0.9	0.5	1.5	2.1	-0.5	0.4
2007	1.0	1.0	1.0	1.1	-446.5	0.4	1.4	1.0	1.7	1.9	-0.3	0.3
2008	1.5	1.0	1.0	1.2	-412.7	0.3	2.1	1.8	1.8	1.7	-0.6	0.4
2009	1.5	1.0	1.0	1.2	-370.7	0.3	2.8	2.7	1.9	1.0	-0.5	0.4

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WTUK1.DB: UK government consumption +1% of GDP

UK DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	REAL PERSONAL INCOME	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES (ex.MIPS)	SHORT-TERM INTEREST RATE (PTS)	EFFECTIVE EXCHANGE RATE	CURRENT ACCOUNT (% OF GDP!)	GOVERNMENT BALANCE (% OF GDP!)
2005	-0.1	0.1	0.7	0.5	-20.5	0.1	0.7	0.0	0.7	0.8	-0.4	0.4
2006	-0.3	0.4	0.5	0.6	-28.5	0.1	1.6	0.4	0.8	0.1	-0.4	0.5
2007	-0.5	0.5	0.3	0.3	2.0	0.0	2.1	0.8	0.7	-0.6	-0.4	0.4
2008	-0.3	0.5	0.3	0.2	15.5	0.0	2.3	1.1	0.7	-1.1	-0.4	0.3
2009	-0.1	0.5	0.4	0.3	7.0	0.0	2.6	1.4	0.7	-1.5	-0.5	0.4

WTUK2.DB: UK business investment +1% of GDP

UK DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	REAL PERSONAL INCOME	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES (ex.MIPS)	SHORT-TERM INTEREST RATE (PTS)	EFFECTIVE EXCHANGE RATE	CURRENT ACCOUNT (% OF GDP!)	GOVERNMENT BALANCE (% OF GDP!)
2005	0.0	0.2	0.7	1.1	-21.2	0.1	0.7	0.0	0.6	0.7	-0.3	0.4
2006	-0.1	0.5	0.6	1.4	-33.8	0.1	1.7	0.3	0.7	0.0	-0.3	0.5
2007	-0.1	0.8	0.6	1.4	-5.2	0.0	2.4	0.8	0.7	-0.7	-0.4	0.4
2008	0.2	0.9	0.8	1.4	11.9	0.0	2.8	1.2	0.6	-1.3	-0.5	0.4
2009	0.6	1.0	1.0	1.5	9.6	0.0	3.0	1.5	0.5	-1.8	-0.5	0.

WTUK3.DB: UK short-term interest rates +1% point

UK DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	REAL PERSONAL INCOME	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES (ex.MIPS)	SHORT-TERM INTEREST RATE (PTS)	EFFECTIVE EXCHANGE RATE	CURRENT ACCOUNT (% OF GDP!)	GOVERNMENT BALANCE (% OF GDP!)
2005	-1.0	-0.9	-0.7	-0.5	26.4	-0.1	-0.3	-0.3	1.0	2.1	0.2	0.2
2006	-2.9	-2.2	-2.1	-1.8	108.2	-0.4	-2.6	-1.2	1.0	3.9	0.6	-0.3

WTUK4.DB: UK equilibrium money supply +2%

UK DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	REAL PERSONAL INCOME	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES (ex.MIPS)	SHORT-TERM INTEREST RATE (PTS)	EFFECTIVE EXCHANGE RATE	CURRENT ACCOUNT (% OF GDP!)	GOVERNMENT BALANCE (% OF GDP!)
2005	1.6	1.2	1.2	1.0	-49.0	0.2	0.8	0.4	-1.0	-2.2	-0.3	0.0
2006	0.8	0.5	0.7	0.8	-52.8	0.2	2.9	1.1	1.1	-0.1	-0.2	0.8
2007	-0.3	0.6	-0.4	-0.5	55.7	-0.1	2.9	1.8	0.3	-2.1	0.0	0.0
2008	0.2	0.6	-0.1	-0.4	80.7	-0.2	1.9	1.8	-0.3	-2.6	-0.1	-0.4
2009	0.7	0.4	0.4	0.2	11.5	0.0	1.5	1.6	-0.2	-2.1	-0.2	0.0

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WTUK5.DB: UK Sterling 5% depreciation

UK DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	REAL PERSONAL INCOME	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES (ex.MIPS)	SHORT-TERM INTEREST RATE (PTS)	EFFECTIVE EXCHANGE RATE	CURRENT ACCOUNT (% OF GDP!)	GOVERNMENT BALANCE (% OF GDP!)
2005	-0.2	-0.2	0.2	0.5	-0.9	0.0	0.3	0.3	0.3	-4.8	0.1	0.2
2006	-0.3	0.0	0.6	1.7	-23.3	0.1	1.2	0.6	0.8	-4.8	0.5	0.6
2007	-0.6	0.2	0.5	2.1	-26.3	0.1	2.4	1.1	1.1	-4.8	0.7	0.7
2008	-0.6	0.5	0.4	2.0	-1.2	0.0	3.3	1.7	1.2	-4.8	0.7	0.6
2009	-0.4	0.6	0.3	1.7	20.0	0.0	3.7	2.3	1.0	-4.8	0.6	0.5

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WTUK6.DB: World oil price + US$ 10 per barrel

UK DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	REAL PERSONAL INCOME	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES (ex.MIPS)	SHORT-TERM INTEREST RATE (PTS)	EFFECTIVE EXCHANGE RATE	CURRENT ACCOUNT (% OF GDP!)	GOVERNMENT BALANCE (% OF GDP!)
2005	-0.6	-0.6	-0.3	-0.1	16.5	-0.1	0.0	0.5	0.3	-0.3	0.2	0.1
2006	-0.9	-0.5	-0.5	-0.2	24.6	-0.1	-0.5	0.4	-0.1	-0.2	0.3	-0.2
2007	-0.6	-0.4	-0.3	-0.1	3.4	0.0	-0.7	0.2	-0.1	0.5	0.2	-0.1
2008	-0.3	-0.3	-0.1	0.0	-18.4	0.0	-0.5	0.1	0.1	0.9	0.1	0.1
2009	-0.4	-0.3	-0.2	-0.1	-15.3	0.0	0.0	0.2	0.3	0.6	0.1	0.2

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WTUK7.DB: Ready reckoner: GDP +1%, balanced demand expansion

UK DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	REAL PERSONAL INCOME	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES (ex.MIPS)	SHORT-TERM INTEREST RATE (PTS)	EFFECTIVE EXCHANGE RATE	CURRENT ACCOUNT (% OF GDP!)	GOVERNMENT BALANCE (% OF GDP!)
2005	1.0	0.2	1.0	0.8	-28.4	0.1	1.0	0.0	1.0	1.2	-0.2	0.7
2006	1.0	0.6	1.0	0.9	-46.6	0.2	2.5	0.5	1.4	0.7	-0.3	1.0
2007	1.0	0.9	1.0	0.9	-21.8	0.1	4.0	1.2	1.7	-0.1	-0.4	1.1
2008	1.0	1.1	1.0	0.9	-0.8	0.1	5.2	2.1	1.8	-1.1	-0.4	1.1
2009	1.0	1.3	1.0	1.1	6.3	0.1	6.1	2.9	1.8	-2.1	-0.5	1.0

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Annex E: Standard Simulation results for emerging countries

WTEM1.DB Government Spending up 1% GDP

SOUTH KOREA DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	REAL PERSONAL INCOME	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EXCHANGE RATE PER DOLLAR	CURRENT ACCOUNT (% OF GDP!)	GOVERNMENT BALANCE (% OF GDP!)
2005	0.3	0.5	0.8	0.7	-3.6	0.3	0.1	0.0	0.1	-0.1	-0.5	-0.9
2006	0.6	0.9	0.9	0.7	-5.0	0.4	0.4	0.0	0.4	-0.2	-0.6	-1.0
2007	0.6	0.9	0.8	0.4	-4.4	0.4	0.6	0.1	0.7	-0.3	-0.5	-1.1
2008	0.3	0.6	0.5	0.0	-3.3	0.3	0.7	0.3	1.0	-0.1	-0.4	-1.3
2009	0.1	0.4	0.4	0.1	-3.3	0.3	0.7	0.6	1.1	0.1	-0.3	-1.5

WTEM1.DB Government Spending up 1% GDP

INDONESIA DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	GROSS FIXED INVESTMENT	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EXCHANGE RATE PER DOLLAR	CURRENT ACCOUNT (% OF GDP!$)	GOVERNMENT BALANCE (% OF GDP!)
2005	0.4	1.0	0.9	1.1	-29.5	0.3	0.3	0.0	0.0	-0.1	-0.5	-0.9
2006	1.0	1.9	1.2	1.4	-50.7	0.5	0.7	-0.1	0.2	-0.2	-0.8	-0.8
2007	1.1	1.2	1.2	1.1	-53.2	0.5	0.6	-0.1	0.3	-0.2	-0.8	-0.9
2008	0.9	0.6	1.0	0.9	-48.6	0.5	0.6	0.0	0.5	-0.1	-0.8	-1.1
2009	0.8	0.5	0.9	0.9	-45.2	0.4	0.7	0.2	0.6	0.1	-0.8	-1.2

WTEM1.DB Government Spending up 1% GDP

POLAND DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	GROSS FIXED INVESTMENT	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EXCHANGE RATE PER DOLLAR	CURRENT ACCOUNT (% OF GDP!$)	GOVERNMENT BALANCE (% OF GDP!)
2005	0.3	0.1	0.6	0.7	-28.5	0.2	0.3	0.0	0.0	-0.1	-0.3	-1.1
2006	0.7	0.2	0.6	0.8	-36.5	0.3	0.4	0.0	0.1	-0.3	-0.5	-1.1
2007	0.6	0.2	0.6	0.6	-36.6	0.3	0.3	-0.1	0.3	-0.2	-0.6	-1.2
2008	0.6	0.1	0.6	0.7	-40.1	0.3	0.3	0.0	0.6	-0.3	-0.6	-1.3
2009	0.7	0.2	0.6	0.6	-38.1	0.3	0.4	0.1	0.5	-0.1	-0.7	-1.5

WTEM1.DB Government Spending up 1% GDP

BRAZIL DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	GROSS FIXED INVESTMENT	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EXCHANGE RATE PER DOLLAR	CURRENT ACCOUNT (% OF GDP!$)	GOVERNMENT BALANCE (% OF GDP!)
2005	0.4	0.6	1.2	1.4	-195.9	0.5	0.3	0.0	0.3	-0.5	-0.2	-1.7
2006	1.0	0.7	1.4	1.7	-352.4	0.9	0.3	-0.3	0.7	-1.4	-0.4	-1.9
2007	0.8	0.8	1.2	1.3	-363.8	0.9	-0.1	-0.5	1.2	-1.7	-0.4	-2.3
2008	0.5	1.1	1.1	1.2	-353.6	0.9	0.0	-0.4	1.6	-1.6	-0.5	-2.7
2009	0.5	1.6	1.2	1.3	-369.6	0.9	0.4	0.0	1.6	-1.2	-0.5	-3.0

WTEM3.DB Local interest rate up 1% point

SOUTH KOREA DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	REAL PERSONAL INCOME	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EXCHANGE RATE PER DOLLAR	CURRENT ACCOUNT (% OF GDP!)	GOVERNMENT BALANCE (% OF GDP!)
2005	-0.4	-0.1	-0.3	-0.2	1.2	-0.1	0.0	0.0	1.0	-0.2	0.1	-0.1
2006	-0.8	-0.5	-0.6	-0.7	3.2	-0.3	-0.2	0.0	1.0	-0.5	0.3	-0.2

WTEM3.DB Local interest rate up 1% point

MALAYSIA DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	GROSS FIXED INVESTMENT	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EXCHANGE RATE PER DOLLAR	CURRENT ACCOUNT (% OF GDP!$)	GOVERNMENT BALANCE (% OF GDP!)
2005	-0.2	-0.6	-0.2	-0.2	0.7	-0.1	-0.1	0.0	1.0	-0.3	0.1	-0.1
2006	-0.1	-1.2	-0.4	-0.5	1.5	-0.1	-0.3	-0.2	1.0	-0.6	0.0	-0.3

WTEM3.DB Local interest rate up 1% point

POLAND DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	GROSS FIXED INVESTMENT	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EXCHANGE RATE PER DOLLAR	CURRENT ACCOUNT (% OF GDP!$)	GOVERNMENT BALANCE (% OF GDP!)
2005	-0.2	-0.4	-0.2	-0.2	7.8	-0.1	-0.1	-0.1	1.0	-0.3	0.0	-0.1
2006	-0.5	-0.5	-0.4	-0.4	21.0	-0.2	-0.3	-0.2	1.0	-0.5	0.0	-0.3

WTEM3.DB Local interest rate up 1% point

BRAZIL DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	GROSS FIXED INVESTMENT	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EXCHANGE RATE PER DOLLAR	CURRENT ACCOUNT (% OF GDP!$)	GOVERNMENT BALANCE (% OF GDP!)
2005	-0.4	-0.2	-0.3	-0.3	38.0	-0.1	-0.1	0.0	1.0	-0.2	0.0	-0.3
2006	-0.8	-0.6	-0.6	-0.7	123.8	-0.3	-0.3	-0.1	1.0	-0.3	0.0	-0.6

WTEM4.DB Risk premium on emerging countries up 5 points

SOUTH KOREA DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	REAL PERSONAL INCOME	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EXCHANGE RATE PER DOLLAR	CURRENT ACCOUNT (% OF GDP!)	GOVERNMENT BALANCE (% OF GDP!)
2005	-0.1	-0.1	-0.2	-0.3	0.8	-0.1	0.0	0.0	0.0	0.1	-0.1	0.0
2006	-0.5	-0.5	-0.6	-0.8	2.8	-0.2	-0.2	0.0	0.8	0.9	-0.1	-0.1
2007	-1.4	-0.9	-0.9	-0.9	4.9	-0.4	-0.4	0.1	1.9	1.9	-0.1	-0.4
2008	-1.9	-1.1	-1.1	-0.7	6.1	-0.5	-0.5	0.1	2.1	2.3	-0.1	-0.6
2009	-2.1	-1.2	-1.0	-0.5	6.5	-0.5	-0.7	-0.1	2.3	2.4	-0.1	-0.7

WTEM4.DB Risk premium on emerging countries up 5 points

INDONESIA DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	GROSS FIXED INVESTMENT	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EXCHANGE RATE PER DOLLAR	CURRENT ACCOUNT (% OF GDP!$)	GOVERNMENT BALANCE (% OF GDP!)
2005	-1.8	-7.2	-1.7	-2.0	54.6	-0.6	-0.6	0.0	3.8	0.5	0.3	-0.8
2006	-3.1	-9.0	-2.5	-3.1	108.1	-1.1	-1.3	0.4	3.3	1.6	0.4	-1.6
2007	-3.4	-7.8	-2.7	-2.8	124.0	-1.2	-1.0	0.7	3.3	2.2	-0.1	-2.1
2008	-3.3	-6.5	-2.4	-2.4	121.4	-1.1	-0.9	0.8	2.8	2.7	-0.1	-2.2
2009	-2.9	-5.0	-2.0	-2.0	106.7	-1.0	-0.8	0.5	2.4	2.3	-0.2	-2.1

WTEM4.DB Risk premium on emerging countries up 5 points

POLAND DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	GROSS FIXED INVESTMENT	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EXCHANGE RATE PER DOLLAR	CURRENT ACCOUNT (% OF GDP!$)	GOVERNMENT BALANCE (% OF GDP!)
2005	-0.2	-0.3	-0.2	-0.2	7.3	-0.1	-0.1	0.0	0.7	0.0	0.0	-0.1
2006	-0.3	0.0	-0.3	-0.4	17.3	-0.1	-0.2	0.0	0.0	0.6	-0.2	-0.2
2007	-0.6	-0.4	-0.4	-0.5	22.4	-0.2	-0.2	0.1	1.0	0.8	-0.2	-0.4
2008	-0.7	-0.4	-0.4	-0.4	26.2	-0.2	-0.1	0.2	1.0	1.3	-0.2	-0.5
2009	-0.4	-0.2	-0.2	-0.2	14.0	-0.1	0.1	0.3	0.7	1.6	-0.2	-0.5

WTEM4.DB Risk premium on emerging countries up 5 points

BRAZIL DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	GROSS FIXED INVESTMENT	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EXCHANGE RATE PER DOLLAR	CURRENT ACCOUNT (% OF GDP!$)	GOVERNMENT BALANCE (% OF GDP!)
2005	-1.2	-0.6	-0.7	-0.8	102.5	-0.3	-0.1	0.1	3.3	0.9	-0.7	-1.4
2006	-3.0	-1.6	-1.7	-2.3	389.3	-1.0	-0.2	0.6	4.0	3.1	-1.5	-3.5
2007	-4.1	-2.2	-2.5	-2.9	638.4	-1.6	0.1	1.2	4.5	4.7	-2.1	-4.7
2008	-5.1	-2.3	-3.0	-3.4	845.2	-2.1	0.4	1.7	5.3	6.4	-2.6	-6.0
2009	-6.2	-1.9	-3.4	-3.8	1023.3	-2.5	0.6	2.0	6.5	7.7	-3.2	-7.9

WTEM5.DB local currency depreciation (5%)

SOUTH KOREA DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	REAL PERSONAL INCOME	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EXCHANGE RATE PER DOLLAR	CURRENT ACCOUNT (% OF GDP!)	GOVERNMENT BALANCE (% OF GDP!)
2005	0.7	0.8	1.9	3.1	-8.1	0.7	0.3	0.4	-0.9	5.0	-0.1	-0.1
2006	2.8	2.3	3.1	4.1	-15.4	1.3	1.4	0.5	-2.4	5.0	-0.8	0.2
2007	4.2	2.9	3.5	2.9	-16.6	1.4	2.5	1.0	-3.5	5.0	-1.2	0.4
2008	4.7	3.0	3.7	3.1	-17.9	1.5	3.4	1.9	-2.9	5.0	-1.2	0.5
2009	4.0	2.6	3.0	2.2	-16.5	1.4	4.3	3.1	-1.4	5.0	-0.9	0.3

WTEM5.DB local currency depreciation (5%)

MALAYSIA DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	GROSS FIXED INVESTMENT	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EXCHANGE RATE PER DOLLAR	CURRENT ACCOUNT (% OF GDP!$)	GOVERNMENT BALANCE (% OF GDP!)
2005	0.4	2.7	1.1	0.9	-3.6	0.3	0.5	0.8	-2.8	5.0	0.6	0.5
2006	1.4	7.6	3.2	3.5	-10.9	1.0	2.8	1.4	-3.3	5.0	0.6	1.3
2007	2.1	6.7	3.5	3.5	-10.6	1.0	4.1	1.7	-3.3	5.0	0.6	1.8
2008	1.7	3.6	2.7	2.2	-7.2	0.6	4.4	2.2	-3.3	5.0	0.8	1.9
2009	0.9	1.6	1.7	1.2	-3.5	0.3	4.8	3.4	-2.7	5.0	0.8	1.7

WTEM5.DB local currency depreciation (5%)

POLAND DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	GROSS FIXED INVESTMENT	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EXCHANGE RATE PER DOLLAR	CURRENT ACCOUNT (% OF GDP!$)	GOVERNMENT BALANCE (% OF GDP!)
2005	-0.2	0.2	1.0	0.8	-39.4	0.3	0.7	1.1	1.0	5.0	0.3	0.0
2006	1.6	1.1	2.5	2.8	-126.2	1.0	2.7	1.8	1.1	5.0	0.7	0.4
2007	2.0	1.6	2.1	1.7	-92.5	0.8	2.8	2.0	0.7	5.0	0.2	0.3
2008	2.0	1.8	2.4	1.9	-113.1	1.0	3.1	2.4	0.5	5.0	0.5	0.4
2009	2.2	1.5	2.2	2.0	-113.9	1.0	4.0	3.2	1.3	5.0	0.4	0.5

WTEM5.DB local currency depreciation (5%)

BRAZIL DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	GROSS FIXED INVESTMENT	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EXCHANGE RATE PER DOLLAR	CURRENT ACCOUNT (% OF GDP!$)	GOVERNMENT BALANCE (% OF GDP!)
2005	0.9	1.9	1.4	1.3	-188.9	0.5	0.8	0.9	-2.8	5.0	0.3	0.6
2006	4.3	4.4	3.8	4.1	-746.5	1.9	2.5	1.5	-5.0	5.0	0.2	2.6
2007	6.3	4.8	4.9	5.0	-1176.9	3.0	3.1	1.8	-4.5	5.0	0.2	3.2
2008	6.6	4.3	4.9	4.6	-1331.3	3.3	3.8	2.7	-3.8	5.0	0.3	3.2
2009	6.4	2.9	4.3	3.9	-1270.6	3.0	5.1	4.2	-3.4	5.0	0.1	3.2

WTEM6.DB World oil price +US$ 10 per barrel

SOUTH KOREA DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	REAL PERSONAL INCOME	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EXCHANGE RATE PER DOLLAR	CURRENT ACCOUNT (% OF GDP!)	GOVERNMENT BALANCE (% OF GDP!)
2005	-0.9	-0.9	-0.4	-0.1	1.8	-0.2	0.1	0.8	1.5	0.6	-1.1	-0.7
2006	-1.4	-1.2	-0.6	-0.3	4.6	-0.4	0.3	1.1	0.9	1.2	-0.7	-0.8
2007	-2.1	-1.8	-1.2	-1.1	8.9	-0.8	0.4	1.5	1.3	1.6	-0.6	-0.8
2008	-2.3	-2.0	-1.0	-0.5	9.7	-0.8	0.7	1.9	1.0	1.5	-0.4	-0.9
2009	-2.2	-1.8	-0.9	-0.2	9.6	-0.8	1.0	2.1	1.0	1.1	-0.4	-0.9

WTEM6.DB World oil price +US$ 10 per barrel

INDONESIA DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	GROSS FIXED INVESTMENT	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EXCHANGE RATE PER DOLLAR	CURRENT ACCOUNT (% OF GDP!$)	GOVERNMENT BALANCE (% OF GDP!)
2005	-0.3	-0.4	-0.3	-0.3	7.4	-0.1	0.1	0.6	0.2	-0.3	0.6	0.3
2006	-1.1	-2.1	-1.0	-1.1	41.5	-0.4	0.2	1.0	0.9	-0.1	0.8	0.2
2007	-1.5	-1.7	-1.1	-1.2	59.9	-0.6	0.3	1.5	0.2	0.8	0.8	0.1
2008	-1.3	-0.1	-0.7	-0.6	50.0	-0.5	0.9	2.0	-0.1	0.9	0.7	0.2
2009	-1.0	0.1	-0.5	-0.3	39.9	-0.4	1.4	2.2	0.1	0.7	0.6	0.4

WTEM6.DB World oil price +US$ 10 per barrel

POLAND DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	GROSS FIXED INVESTMENT	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EXCHANGE RATE PER DOLLAR	CURRENT ACCOUNT (% OF GDP!$)	GOVERNMENT BALANCE (% OF GDP!)
2005	-0.8	-0.6	-0.4	-0.4	13.7	-0.1	0.3	1.2	1.5	0.1	-0.7	-0.3
2006	-1.3	-0.1	-0.4	-0.6	42.2	-0.3	1.1	2.5	1.4	2.7	-0.9	-0.6
2007	-1.0	-0.1	0.2	0.2	29.0	-0.2	2.6	3.6	1.9	3.4	-0.8	-0.7
2008	-1.0	-0.3	0.0	0.0	46.8	-0.3	3.5	4.5	2.0	3.6	-0.8	-0.9
2009	-0.9	-0.2	0.3	0.2	33.3	-0.2	4.4	5.6	1.8	4.7	-0.7	-0.9

WTEM6.DB World oil price +US$ 10 per barrel

BRAZIL DIFFERENCE TABLE 1 SUMMARY TABLE.
(PERCENTAGE CHANGES FROM BASE ,UNLESS OTHERWISE SPECIFIED)

YEARS BEGINNING Q1	CONSUMER EXPEND-ITURE	GROSS FIXED INVESTMENT	GDP	INDUSTRIAL OUTPUT	UNEM-PLOYMENT ('000S)	EMPLOYMENT	AVERAGE EARNINGS	CONSUMER PRICES	SHORT-TERM INTEREST RATE (PTS)	EXCHANGE RATE PER DOLLAR	CURRENT ACCOUNT (% OF GDP!$)	GOVERNMENT BALANCE (% OF GDP!)
2005	-0.6	-0.3	-0.4	-0.4	55.5	-0.2	0.5	1.2	0.6	0.6	-0.1	-0.4
2006	-0.9	0.1	-0.4	-0.5	168.5	-0.4	1.6	2.4	0.6	2.6	-0.2	-0.6
2007	-0.7	-0.1	-0.2	-0.3	188.4	-0.5	2.8	3.5	-0.1	4.2	-0.3	-0.4
2008	-0.6	-0.2	-0.1	-0.2	178.2	-0.4	3.9	4.7	-0.2	4.8	-0.2	-0.3
2009	-0.7	-0.6	-0.2	-0.3	193.5	-0.5	5.0	5.9	0.1	5.6	-0.1	-0.3